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THE
ANATOMY
of
HUMANE BODIES
By
Will.^m Couper
Surgeon.
1698.

THE
ANATOMY
OF
HUMANE BODIES,
WITH FIGURES
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CHIRURGICAL OBSERVATIONS:
TO WHICH IS ADDED
AN INTRODUCTION
EXPLAINING THE
ADJUNCTS OF ANATOMY,
WITH A COPIOUS INDEX.
BY
William Cowper.



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THE
ANATOMY

HUMAN BODY

BY
WILLIAM BISHOP

OF THE UNIVERSITY OF OXFORD

IN TWO VOLUMES

VOLUME I

OF THE

CHIRURGICAL OPERATIONS

OF THE

THROAT AND LUNGS

WITH A CORRECTION

BY

WILLIAM BISHOP

OF THE UNIVERSITY OF OXFORD

IN TWO VOLUMES

VOLUME I

OF THE

CHIRURGICAL OPERATIONS

OF THE

THROAT AND LUNGS

TO THE
RIGHT HONORABLE
CHARLES
MOUNTAGUE,

FIRST LORD OF THE TREASURY;
CHANCELLOR OF THE EXCHEQUER;
ONE OF THE LORDS OF HIS MA-
JESTYS MOST HONORABLE PRIVY-
COUNCIL; AND PRESIDENT OF THE
ROYAL-SOCIETY, &c.



SIR,

*Having heard from those Persons who have of-
ten the Happiness of waiting on You, how easie
an Access You give to All, I have presum'd to ask
the Honor of being admitted into Your Presence.*

a

If

The DEDICATION.

If this Address may be thought too forward, it will be some Excuse, to have it known, that I was justly afraid of being prevented by those Numbers of Men, Eminent in all Faculties and Professions, who are preparing to make the same Attempt upon You. The Peace, which His Most Sacred MAJESTY has with the greatest Glory brought Home to us, as much as it owes to the Influence of Your particular Counsels, will be very far from allowing You any Share of that Rest, which it affords to all Europe besides: Believe me, SIR, the Men of Letters knowing now, that Your Thoughts are no longer taken up by the War, are all ready to break in upon You with their Offerings; they look on You as their declar'd Patron and Protector; they have upon this Prospect recover'd their Spirits, and enlarg'd their Hopes; and some of them have gone so far, as to think they find You Born for their Advancement, under that very Star, which was never before observ'd to shine out in all its Lustre, but only at the Birth of the Roman Mecænas, and the French Rich-lieu and Colbert.

Every Art and Science pretends a Right to approach You, because every one of 'em is Familiarly known to you: ANATOMY has this also in particular to Alledge for it self, that, having receiv'd its Chief Improvements and Advantages from our own Country-men, it may be accounted of English Growth; which the World will agree, is the most effectual Thing that can be said of it, to Recommend it

The DEDICATION.

it to Your Protection, who lay the Honor and Interest of England so near Your Heart, and whose Love for Your Country, is not to be out-done, but by the Love Your Country returns You.

The Favor of Great Ministers to the Learned, is a Subject that takes up but little Room in our British Annals. It has been thought to be the Defect of some Former Reigns, Famous in all other respects; and was reserv'd, we believe, to Compleat the Glories of This. My Lord Treasurer Burleigh was a better Servant to Queen Elizabeth, than Patron to the Muses: But were Spenser, who had the Misfortune of being born a Hundred Years too soon, Alive at this Time, we have Instances sufficient to Convince us, that his Applications would meet with no Repulse. Mr. Stepny, Mr. Prior, Mr. Congreve, and many more, are as much Distinguish'd by Your Favor, as by their own Merits; the World at last being satisfied, that Polite Learning in good Hands, is so far from excluding Business, that it gives a Grace to it; and that a Genius truly Great, will, which way soever it is Directed, Exert its Force and Maintain its Rank.

You will please to bear this Freedom, SIR, in a Person who as little Capable as he is himself of making a right Judgment of Men, yet living in a Place, where he is ever surrounded on all sides with Your Praises, may have leave to Remember what he so often hears from the Knowing and Judicious, and

The DEDICATION.

to repeat a Character, that comes Warranted to him, by the most allow'd Authorities.

The trueſt Mark of Worth, SIR, is to be Valued there, where One is moſt Known. The People of Weſtminſter, who were acquainted with the Firſt Parts of Your Life, and have had the longeſt Experience of Your Virtues, own Openly their juſt Eſteem of You, by Placing in You the Truſt of Representing them in Parliament. 'Tis there, in the Miſt of Thoſe that Chooſe You, that Your Excellent Conduct of Publick Affairs is ſtill Supplying Them, and all the World, with Freſh Matter of Applauſe and Admiration: But they had never more Reaſon to be Satisfied with their Choice, than on that Glorious Day, when Right was done to Your Merit, by the Teſtimony of the Nation in a Vote of the Houſe of Commons; where it was Reſolv'd, That it is the Opinion of this Houſe, That the Honorable CHARLES MOUNTAGUE ESQUIRE, CHANCELLOR OF THE EXCHEQUER, for his Good Services to this Government, do's Deſerve His Maſtey's Favor. A Vote, that carries more Honor in it, than all the Titles and Patents of Modern Heraldry, than all the Inſcriptions of Ancient Greece or Rome. What has ever happen'd like this to any of our Anceſtors, in all the Courſe of our Records and Hiſtories? Who beſides, has Receiv'd ſo Solemn, ſo Noble, and ſo Publick, a Panegyrick from the Vociſ of his Country; Pronounc'd within thoſe Walls, where the
Tongue

The DEDICATION.

Tongue is left to its Liberty, and no Man Oblig'd to Speak otherwise than he Thinks? 'Tis, without doubt, the First Wish an English-man would make, thus to Deserve, and Possess the United Favors of Prince and People; and this Degree of Happiness has been Granted to You alone: The Next is, to have a Place in the Good Opinion of Him that is so Universally Valued; and this is the Utmost Ambition of

S I R,

Your Most Humble

and Most Obedient

Servant

WILLIAM COWPER.

THE INTRODUCTION

Explaining the ANIMAL OECONOMY.



THE Contemplation of Humane Bodies is doubtless one of the most Diverting and Noble Amusements, in which a Philosophical Mind can employ itself. The Structure, Contrivance, and Disposition of the Parts are Astonishing, and we can hardly desire more plain and convincing Proofs of the Wisdom and Providence of the Author of Nature, than what may be deduc'd from this

Source. How surprizing are the Discoveries which the Happy Industry of the present Age has made in the Animal World: The Doctrine of the Circulation of the Blood; the *Unity* of the Veins and Arteries; the Origin and Distribution of the Chyle and *Lympha*; the *Ovaria* in Females; the *Embriunculi* in the Masculine Seed, are equally certain and amazing; besides a Multitude of other Curious Observations we Daily make by the Help of Microscopes, Mercurial Injections, and such like Methods.

These are sufficient Motives to induce all Inquisitive Persons, and Lovers of Natural History, to the Study of *Anatomy*; but all Professors of Medicine are more immediately concern'd to be Acquainted with it; this being little less than the *Basis* and Foundation of their Art. Without a due Knowledge of the Animal Mechanism, I doubt all our Attempts to Explain the Multiform Appearance of Animal Bodies, will be Vain and Ineffectual, and our Ideas of the Causes of Diseases and their Symptoms, as Extravagant and Absurd as those of the *Chinese* and *Indians*; nay I am afraid the whole Art of Physick will be little better than Empirical.

But if the Knowledge of our Bodies do's so much conduce to advance true Philosophy and Medicine; it is not less required in the Practice of Surgery: In this Case it seems not merely convenient, but absolutely necessary; I mean so far as concerns the External Parts, since the Artist here, do's not as in the former Instances, Acquiesce in Contemplating his Subject, and the Manner how it is Affected; but is often oblig'd to Perform some Difficult, and perhaps Hazardous Operation on it. For my Part I cannot forbear wondring at the Confidence of Ignorant Men, who dare Attack a Humane Body, make Incisions, apply Causticks Actual and Potential; without a due Knowledge of the Site, Position, Dependence, and other necessary Considerations of the Parts concern'd. The Fatal Consequences of these bold Practices are frequently felt, an Instance or Two of which, are Accidentally shewn, *Tab. 13. Fig. 1. Tab. 15. Fig. 2.*

I must confess frequent seeing and assisting at Chirurgical Operations may dispose Men to Perform the like again, when Circumstances in all Points shall agree; but without a Competent, if not Accurate Knowledge of *Anatomy*, and actual Administration of Dissection, such Persons must be a long Time Spectators, before they can Arrive at a tolerable Pretence to a General Practice: And therefore as I cannot but deplore the Profound and Universal Ignorance which prevails, so I would candidly recommend it to most of the Surgeons in this vast and populous City, to apply themselves with more Industry than they have hitherto done, to so Useful a Part of their Art; who would soon then be convinc'd this was no Dishonour to themselves, and cease to Reproach

others who have spent some of their vacant Hours in these Exercises.

But this is foreign to my purpose, and therefore I shall Address my self to the Business now before me, which is to Present the Reader with a Brief and General Plan of the *Animal Oeconomy*, as an Introduction to the following Tables.

All the Functions of an Animate Body may be well enough divided into *Natural* and *Animal*; by *Natural*, I mean all which Terminate in the Body, and Conduce to the preservation of the Individual or Propagation of the Species; by *Animal*, I understand such, in which the Soul is concern'd, which in Regard of the Body to which it is United, are Passive or Active; the First is Sense; the Latter Voluntary Motion. For the more Orderly Distribution of the Whole, we shall first Treat of the Former, leaving the *Animal Functions* to succeed; and here we shall follow the Process of Nature; beginning with the First Reception of the Aliment in the Mouth, and pursuing it thence thro' its several Stages.

After the Aliment is taken into the Mouth, (for the more Commodious doing of which, the *Dentes Incisorii* are often Employ'd) it here suffers Commintion, and is mixt with *Saliva*, which is Previous to the Second Preparation, it receives in the Stomach. This Operation is call'd Mastication, and is perform'd by the Lower Jaw, Variously mov'd by its Proper Muscles, and Assisted by the Tongue, Cheeks, and Lips; which last, still apply the Less divided Parts of the Mass, to the *Dentes Molares*, for it's due Commintion; while all the Neighbouring Muscles in their several Actions, Compress the Parotid, Maxillary, Sublingual Salivary Glands, and those of the Lips, Cheeks, &c. and force them to Discharge their Contents to mix with the Masticated Aliment, now ready for *Deglutition*.

The Aliment after it has undergone this Alteration, do's not Descend into the Stomach by its own Weight, but is convey'd thither by the joint Action of the Muscles of the Tongue, *Os Hyoides*, *Fauces*, and *Oesophagus*; all which Conspire in *Deglutition*, by Raising and Dilating the *Gula*, and Protruding the Meat into it. The whole Action do's very much resemble the pouring Corn into a Sack, and is done in the Manner I shall just now Describe. The Root of the Tongue being Deprest by means of its Muscular Fibres, its Tip and Sides are applied in a Semicircular Manner, to the Insides of the whole Range of Teeth of the Upper Jaw or Gums, when these happen to be wanting; and the Whole in this Position is drawn Upwards, by the *Musculi Styloglossi* and *Stylohyoidei*, *Tab. 14. Fig. 1. Tab. 15. Fig. 1.* At the same Time the *Fauces* are Rais'd by the *Musculi Stylopharyngei*, which by their Oblique Position, (as is Noted *App. Fig. 38.*) draw open their Mouth, and Dilate that Cavity. Now Two Thirds at least of the Upper Surface of the Tongue, being applied to the Roof of the Mouth, and drawn as we have now Describ'd, Upwards, and Inwards; the *Epiglottis* is Deprest in such Manner, that the Aliment is Protruded over it (as on a Bridge) into the Dilated Cavity of the *Fauces*, and thence by the Contraction of the *Musculus Pterygopharyngeus* and *Oesophagus*, *App. Fig. 38.* it is Deprest into the *Gula*, which Helps its Descent into the Stomach, by the Action of its Muscular Fibres.

We must not omit to observe here, That in the Instant the Aliment passes thro' the *Isthmus* of the Throat, the *Gargareon* is drawn Upwards and Backwards, by the *Musculi Sphingostaphylini*, (*Express Append. Fig. 8.*) and the

Foramina

The INTRODUCTION.

Foramina Narium by this means occluded, while the *Epiglottis* below covers the *Rimula*, as was above Noted; and by this means the Matter in its Passage is hindered from Reverting by the Nose, or Descending into the Wind-Pipe; The first happens when the *Gargareon* is wanting, whether by Venereal Exulcerations or otherwise; or Intumefied and Inflamed as in the Small Pox, and cannot yield to this Motion. We may likewise Note, That the *Musculus Mylohyoideus* (T. 15. F. 1.) in its Action does press the Sublingual and Maxillary Glands, and force them to discharge their secreted Liquors, by the *Papilla*, situated at the *Frænum* or Ligament of the Tongue; and that the Muscles which Contract the *Fauces*, have the same Effect on the Tonsils and other Glands of that Part; all which Liquors, discharged from the Mouths of their Excretory Channels, do facilitate the Passage thro' the *Gula*, and serve to Compose the Stomachick *Menstruum*; of which further in the next Paragraph.

After the Aliment, thus alter'd by Comminution and Admission with the *Saliva*, is received into the Stomach, we proceed next to consider, how its Second Preparation is perform'd. The great Agent in Digestion is the Stomachick Juice, secreted from the Blood by numerous Glands in this Part, and discharged into its Cavity, in Conjunction with the Spitte. This is that which acts promptly upon the Meat lodg'd in the Capacity of the Stomach, and from the Mixture of these two Juices, is compounded a proper *Menstruum*, by which the Parts of the Aliment are dissolved, and receive their first Transmutation within the Body. In this Action, which is a Dissolution of the Texture of the Alimentary Mass, the Aerial Parts included in its Pores, now escape from their former Prisons, and being rarified, distend the whole Body of the Stomach; and this I take to be the true Reason why most Men have less Appetite at some distance of Time, viz. when this Intumescence is made, than immediately after they cease from Eating: From the same Cause arise frequent Eructations, great Inflation from divers Meats, such as Old Pease, Cabbage, Roots, Herbs, and other Vegetables, which very much disturb decay'd debilitated Stomachs. I am apt to suspect the Stomachick *Menstruum* may excite an Intestine motion of the Particles of the Mass in Digestion; which yet I do not think fit to call Fermentation, fearing so bold a Term may mislead us into a False Idea of a greater Conflict than really happens.

The Intumescence or Dilatation of the Stomach has two Effects: First to compress the Gall Bladder and *Pancreas*, and oblige their *Ductus Excretorii* to spue out their Contents into the *Duodenum*; next to retard the Refluent Blood, and by this means dispose the Muscular Fibres of the Ventricle to a Contraction. The Reason of this last Hint will appear by what we have offer'd concerning Muscular Motion, in the Introduction to our *Myotomia Reformata*.

For the Cause of Hunger which is an observable Phenomenon belonging to this part, I conceive it to be an Irritation of the Stomach, arising from a copious Quantity of this *Menstruum*, when it wants Matter to act upon. This conjecture seems more probable, since it is Natural to discharge the Spitte out of the Mouth which comes into it at that Time, rather than suffer it to descend into the Stomach; and we may perpetually observe a depraved Appetite does follow a Vitiation of the *Saliva*, as in Scorbutick Habits, Salivations by Mercurial Medicines, and such like Cases.

When the Mass is sufficiently prepar'd and reduced to a Pulraceous Consistence, the Stomach by the help of its Muscular Fibres contracts it self, and expels its Contents thro' the *Pylorus* into the *Duodenum*; where the Digested Mass is mixed with the Bile and Pancreatick Juice, (forced to discharge it self here as was just now described) which Volatilize, Subtiliate, and Separate the more Fluid and Fine Parts of the Aliment, from the more Impure and Gross, and here it is that Chylification is first made perfect. Now the Bile abounding with Lixivial Salt, is apt to intangle with the grosser Parts of the Chylaceous Mass, and its Saline Quality not only cleanses the Cavities of the Guts from the *Mucus*, Excreted by their Glands (App. Fig. 40.) (to smear their Inmost Coat, and defend the *Ostia* of the Lacteal Vessels from being injured by Extraneous Bodies, which may happen to pass that way) but Stimulates the Intestines in their Peristaltick Motion.

The Peristaltick or Wormlike Motion of the Guts being thus Accelerated by the Acrimony of the Bile, the Contents of the Intestines are carried on, and the Thinner and more Fluid Parts, fitted for the Pores of the Lacteal Vessels, is absorbed by them, and the Thicker move on more slowly, till by the many Stops they meet with in the Connivent Valves, all the Chyle is at length absorbed, and the Remains being merely Excrementitious, are only fit to be excluded by Stool.

This Vermicular Motion of the Guts, is perform'd by the Alternate Contraction of their Longitudinal and Transverse Fibres, (App. Fig. 39. 40.) which at the same

Time convey the Digested Mass thro' the Intestinal Tube, and express the Chyle into the Orifices of the Lacteal Vessels adapted to receive it; whose Progress from the Intestines, till it is discharged into the Mass of Blood, next presents it self to our Consideration: By the reciprocal Action of these differing Fibres, and the Apposition of the Connivent Valves (Tab. 39. Fig. 2.) the Chyle is forced into the Lacteal Vessels, (Tab. ib. Fig. 1.) and hence it is we cannot make any Fluid pass from the Cavity of the Guts into the same Vessels, when the Peristaltick Motion ceases. A farther Use of the Contraction of these Muscular Fibres, is to Accelerate the Chyle in its Progress, till the *Lympha* derived from the Arteries of the Guts joyn with it, which is done before it leaves the External Surface of the Intestines; by this Addition the Chyle is diluted and assisted in its Progress towards the Mesenterick Glands; in the Cells of which it is a Second Time Mixed with a Juice or Lymphatick Liquor there Secreted from the Arteries, and so carried on to the *Vasa Lactea secundæ Generis*. These Vessels resembling Pipes, convey the Chyle from hence, all emptying themselves into the Common *Receptacle* or *Cistern*; the happy Discovery of which, we owe to the Observation of *Monf. Pecquet*: It is here the *Lympha* returned from the Inferior Limbs and adjacent Parts, is mixed with the Chyle, (App. Fig. 11.) which not only serves to dilute, but promotes its Ascent thro' the Thoracick Duct, (Fig. ib.) to the Left Subclavian Vein, (Fig. ib.) where this Channel empties its Contents into the main Current of the Blood. If we consider in this Duct, its several Divisions and Inosculations, (resembling the Veins of the Testicles) its numerous Valves looking from below Upwards, its advantageous Situation between the Great Artery and *Vertebrae* of the Back, together with the Ducts discharging their Refluent *Lympha* from the Lungs, and the other Neighbouring Parts, we shall find all conduce to demonstrate the utmost Art of Nature, used in furthering the Steep and Perpendicular Ascent of the Chyle; which Beautiful Order is Represented App. Fig. 11. and cannot but equally Create in us Delight and Admiration.

Having traced this Animal Juice to its Reception into the Blood, with which it is at last Circulated and Assimilated, we shall proceed to the Blood it self, whose Circular Motion, the various Artifices of Nature for adjusting the Proportions and other subordinate Contrivances; the Manner and Cause of the Contraction of the Heart and Arteries, Respiration, with the whole Theory of the *Lympha* and Glandular Secretion in the Order of Nature, follow.

The Refluent Blood in the Upper and Lower Trunk of the *Vena Cava* meeting in the Right Auricle of the Heart, is thence expelled by its Contraction into the Right Ventricle, when the Heart is in its Diastole; but by its Systole or Contraction, it is thence driven into the *Arteria Pulmonaris*, from whose Capillary Vessels it passes into the Extremities of the *Vena Pulmonaris*, and thence returning, is discharged into the Left Auricle and Ventricle of the Heart: From whence it is again by the Systole driven into the *Aorta*, by whose Branches it is convey'd thro' the whole System of the Body: But when it arrives in the Capillary Arteries, it do's not stop there, but passes into the like Capillary Veins, and from thence into the greater Branches, next into the Trunk of the *Vena Cava*, and so into the Right Ventricle again. In the mean time the Three Tricuspid Valves in the Right (Tab. 22. Fig. 6.) and the two Mitral Valves (Tab. ead. Fig. 12.) in the Left Ventricle of the Heart, oppose its return into the *Vena Cava* and *Vena Pulmonaris*; and the Semilunary Valves of the *Arteria Pulmonaris* (Tab. ead. Fig. 14.) and *Aorta*, (Tab. ib. Fig. 13.) prevent its Reflux into the Ventricles. The Structure and Position of which Membranes, are sufficient alone to lead all Observing Men into a compleat Knowledge of its Motion and Progress.

The Circular Motion of the Blood was first Explain'd, and the whole Demonstrated in a Treatise expressly Writ upon that Subject, and Published in the Year 1628. by our Learned and Ingenious Dr. *Harvey*; To omit all disputes here how far this was known to *Casalpinus*, *Columbus*, *Servetus*, or any of the Anatomists or Virtuoso's of the last Age. But the Manner how this Animal Liquor is transmitted from the Arteries to the Veins, has remained hitherto a Secret, and afforded Matter of Controversie. Some pretend this is done by some blind Imperceptible *Meatus* in the Carnous Parts, and perplex themselves to give Irrational and Chimerical Accounts, which we shall not here lose Time to enumerate or refute. But the late great Improvement of Microscopes has put an end to all these uncertain Conjectures, by discovering to our Naked Eye, that the Veins and Arteries are but one continued inflected Tube, and the Blood passes from one to the other in an uninterrupted Current; which Unity of the Blood-Vessels by a Parity of Reason, we infer extends to the whole System, and will hardly be questioned by those who consider the Prompt Passage of Mercury, and other injected Liquors from the Arteries to the Veins, or see the Globules of Blood passing these *Angustie*, and reverting with incredible Rapidity in the

Fins

The INTRODUCTION.

Fins of Fishes; (*App. F. 4, 5.*) which curious Discovery ought not to be reputed the least Advancement which this Part of Natural History has receiv'd.

The great Engine which sets all this Motion on Foot, is the Heart, (*Tab. 22. Fig. 9.*) by whose repeated Elastick Contraction, the Blood is driven to the remotest Parts thro' the Arterial System, (*App. Fig. 3.*) and forced to continue its Motion back thro' the Venous Channels. This Elastick Force is primarily seated in its own Muscular Fibres, whose Spiral Contortion (*Tab. 22. Fig. 2, 3.*) is very well described by Dr. Lower in his Book *De Corde*; but the Pendulous Position and the Fibres, which compose its Great Arteries, *i. e.* the *Pulmonaris* and *Aorta*, assist very much; and the Heart taken out of the Body and held up by the Arteries, will continue the least gentle Motion impress'd on it for a considerable Time, which Effect can only be ascribed to the Elasticity of the Arterial Trunks by which it is suspended.

The Heart is the immediate Instrument, but what is the *Vis Motrix* which forces its Fibres to a Contraction, is a far greater Difficulty, and one of the most Abstruse, Inscrutable Mysteries of Nature. It is in this respect our Bodies differ from Artificial Machines; the Former having in themselves a perpetual Principle of Motion, which the Latter by no Invention of Men can arrive at. In my Opinion the Heart of an Animal bears a great Analogy to the Pendulums of those Artificial *Automata*, Clocks and Watches, whilst its Motion is perform'd like that of other Muscles, the Blood doing the Office of a *Pondus*. The Observation of the Curious Mons. Peyer in *Parergo Septimo*, seems to favour this Opinion; who tells us, He has with Pleasure seen the Heart renew its Contraction, by blowing into the Thoracick Duct, when the Parts have began to grow stiff after Death. The like Motion of the Heart I have more than once observ'd to be restor'd, by blowing into the Veins of a Dog, and pouring warm Water on it, or applying the Palm of the Hand not long after its Cessation.

Besides the Quantity, doubtless the Quality of the Blood has a Share, since all Distempers which alter the Mass, at the same Time create a Hurry and Disorder in its Motion. To explain the Action of the Blood in this Case, and the Influence it has over the Motion of the Heart, we must consider its Nature, Constituent Parts, and the Alterations it is disposed to receive. This Animal Fluid consists of Two Parts, Serous and Globular. The Distinction of these Parts of the Blood is evident to the Naked Eye, after its Stagnation in any Vessel, but is clearly evinced by the Microscope in its Circulation thro' the Tails and Fins of Fishes, and other Transparent Parts, in the same manner as is Represented *Appendix Fig. 4, 5.* where the Globules seem to Swim in the *Serum* in this State of Mixture. Now the Blood being in this manner a Heterogeneous Liquor, Compos'd of Particles of various Magnitude and Figure, must be subject to an Intestine Motion; but the great Rapidity of its Current thro' the Arteries, and the *Angustia* in the Extremities of the Blood-Vessels, not admitting any Retrograde Motion to be there made, it is deferr'd till it arrives in the Great Veins, where its Progress is retarded, and the Room more spacious, and the Intestine Motion there Commences, which arises to a Greater or Less Height, as the Blood is more or less Charged with Incongruous Parts. The Alteration which the Blood by this means receives, has no inconsiderable Share in the Heart's Contraction; and tho' it be not the prime efficient Cause, yet we cannot deny but that it is Partial and Incitative, as appears in Fevers and several other Distempers, where the whole Mass is Accelerated, and the Pulse more frequent.

Besides all these Causes, the Brain by its Nervous Trunks sent to this Part, which are very Thick and Tense, yet lie very loose, contributes much to this Action. And here we may observe, not only these of the Heart, but the whole System of Nerves which serve the *Viscera* in the *Thorax* and Lower Belly, have their Propagines very Numerous and Tense, notwithstanding which, they lie Loose or Free in their Progress from the Brain to their respective Parts; both which concur in disposing them to Receive and Retain all Impressions from their Extremities: This Faculty beginning to Exert it self even while the *Fetus* is in *Utero*, grows Familiar and Natural, and from this early Habit and Practice of the Infant, they after perform their Duty Sleeping or Waking, without the least Advertence; but this by the by. And now if what has been Noted, shall be thought sufficient to give ground to Hope Future Enquiries may discover more Adequate Causes of this great *Phenomenon*, we have obtained our Desire, and shall leave these Hints to be improv'd by Men of more Industry and Leisure.

Before we leave this Subject, we must not omit to Remark some Observable Artifices of Nature, for the better carrying on the Circulation. The First is the Valves placed in the several Divarications of the Veins, between their Capillar Extremities and Larger Trunks: These are Membranes proceeding from the inner Coat of the Vessels, in the Form of a Crescent or C. which was the Ancient Greek *Sigma*, and are generally Double, with their Concavity looking towards the Heart, and readily give way to the Current of the Blood

thither, as is Represented: (*Tab. 23. F. 7.*) But if by its Weight, or any other Cause, the Blood should Revert, they oppose it, and being Distended, prevent its Return from the Great Trunks of Veins to the Lesser, and at the same time hinder the Superincumbent Blood from pressing on the Inferior; concerning which consult *Tab. 23. Fig. 6.*

Another Considerable Artifice in Nature, is the Conveying great Quantities of Refluent Blood from several Parts of the Trunk by particular Channels, instead of discharging it by the next and most immediate Passage into the Neighbouring Current. Dr. Lower has well Observ'd, that the Heart is not placed in the Center of the Body, but inclines to its Upper Part, which Position is necessary to Drive the Blood in its Systole to the Head, with more Force than is required to make it Descend to the Feet, to which its own Weight and Fluidity do's not a little Conduce. Now the Heart being seated so near the Upper Part, as that Two Parts in Three of the whole Fabrick, appear to be below it, there must be a like Inequality of Blood sent to the Inferior Parts, to that which Ascends to the Superior. And this we see Confirm'd by comparing the Diameter of the Blood-Vessels Descending with the Ascending, the Former being much Larger than the Latter. This great Disproportion of Blood in the Upper System to that of the Lower, seems to threaten a great Disturbance in the Animal Order, but is prevented by the Provident Care of the Author of Nature, in the Manner we are now about to Describe.

The Intercoastal Arteries *App. F. 3.* which arise from the Lower System, are accompanied with Veins (that Return the Blood they Exported) which do not enter into the next Large Trunk according to the ordinary Process of Nature in other Parts; but are all United into One Channel (and sometimes Two) which Ascends by the Side of the *Aorta*, and Empties it self into the Descending Trunk of the *Vena Cava*, there Discharging all its Refluent Blood; which had it been Inserted into the Ascending Trunk, it must have added so great a Weight, that the Blood could not have past up to the Heart, which it now easily do's. Beside these, the Mammary Veins likewise Empty themselves into the Subclavian, so that all the Blood Arising from the *Parietes* of the *Thorax*, the Back and its Muscles, as well as those of the *Scapula*, returns again to the Heart, by the Upper Trunk of the *Vena Cava*, tho' it was sent thither from the Lower Trunk of the *Arteria Magna*.

Another Contrivance of this Nature is Observable in the *Vena Porta*, which Receives the Blood from the Stomach, *Omentum*, Spleen, *Pancreas*, Guts and Mesentery, sent thither by the Coeliack and Mesenterick Arteries, which large Quantity had it Enter'd into the *Vena Cava*, immediately below the Liver or Kidneys, its Weight so far beneath the Diaphragm, must have Hindred its Ascent; wherefore the *Vena Porta* (not unlike the *Azygos* of the *Thorax* before Noted) carries up all the Blood by another Channel, and Discharges it into the Extremities of the *Vena Cava* within the Liver, where it is Diluted and Propell'd by the Refluent Blood from the Splenick Vein, and afterwards assisted in its Ascent, by the Contraction of the Diaphragm.

Here I cannot forbear making a Digression, and presenting my Conjectures of the Use and Office of the Spleen, since it ministers in this Part of the *Animal Oeconomy*. The *Arteria Splenica* is not only very large in Proportion to the Magnitude of the Spleen, but has a Remarkable Tortuous Passage to it, (*Tab. 36. F. 1.*) whence we may conceive as the Quantity of Blood sent to the Spleen is very great, so its *Impetus* is very much Abated: Next the Communications between the Extremities of its Arteries and Veins are very Large, as appears by the Prompt Exit, which Water pour'd into one Finds by the other, and the Inflation of the Veins which is easily made by Blowing into the Arteries, when the whole Spleen and its Veins become Distended with it. The Lympho-ducts of the Spleen we have Observ'd, (*Tab. 36. Fig. 1.*) to Arise from the *Vesicula* at the Extremities of its Veins, and Discharge their Contents into the Neighbouring Lymphatick Glands, whence it is sent into the *Receptacule* of the Chyle: Its Nerves are Distributed thro' its whole Substance, and serve to preserve its Tone and Regulate the Separation of its *Lympha* and Nutritive Juice. But the most exact Scrutiny of *Anatomists* could never yet Discover any Excretory-duct arising from this *Viscus*; and indeed the Patent Communication of its Vessels seems a convincing Proof, that no such Excretory-duct can Exist but must appear very plain. Besides it seems Extravagant and Unbecoming the Wonderful Providence of Nature, to Separate any particular Juice in the Arteries here to be instantly Refunded into the Veins, and we can hardly conceive the Blood can suffer any Alteration, in a Place where the Transit from the one to the other, is so Ample.

After these Considerations Premis'd, if the Problem be Propos'd, What can be the Design of the great Architect of our Bodies, in the Fabrication of so Large and Remarkable a Part, without any Fluid Secreted in it, besides its own Nutritive Juice and *Lympha*? I believe our *Hypothesis* will enable us to give a sufficient Reply to this seeming invincible Difficulty, with which Learned Men have exceedingly perplex'd themselves. I conceive then the Spleen is Design'd by Nature, as

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a Diverticle to receive a large Proportion of Blood to be Refunded by its Veins into the *Porta*, and promote the Reflux of the Blood Imported thither from the Stomach, Guts, *Pancreas*, Mesentery, &c. by whose flow Progress thro' the innumerable Glands of those Parts, it returns Thick and unfit for Motion: And this seems but Necessary that a new Quantity of Blood, charg'd with a Copious *Serum*, should be Infused into this Refluent Liquor before it Arrives at the Liver, to dispose it to pass the Extremities of the *Vena Cava*, and add a fresh *Impetus* to its Languid Motion caus'd by its Long and Tortuous Progress. This I take to be the Use and Office of the Spleen, and seems to have all the Circumstances the Laws of Mechanism require for this Purpose. The Novelty of which Opinion will (I hope) be no Prejudice to its Reception in the Minds of Candid and Impartial Men.

Having thus Represented the Circulation; the Order of Nature leads us to Respiration, which serves in conveying the Blood from the Right to the Left Ventricle of the Heart, and Impregnates it with Parts proper for its further Elaborations.

Respiration or Breathing is a double Action, *i. e.* Inspiration or Receiving of Air into the Lungs; and Expiration or Expelling it again: The whole is done by means of Widening and Straining the Cavity of the *Thorax*, in which the Lungs are contain'd.

How the Cavity of the *Thorax* may be Enlarged and Contracted, we may easily conceive, if we consider the Order of its Bony *Parietes*, (Tab. 27. and 28.) and observe the Oblique Descending Position of the Ribs from the *Vertebrae* of the Back, with their Cartilaginous Connection to the *Os Pectoris*, and the Position and Action of the Diaphragm, as is explained Tab. 52. whence it appears when the Ribs are drawn up, and the Superior Convex Surface of the Diaphragm depress'd towards a Plain, the Included Space must necessarily be Enlarged; and on the contrary very much Strained when the Ribs are drawn down, and the Upper Surface of the Diaphragm Convex towards the Lungs, as it is Represented in the last mention'd Table.

The Elevation and Depression of the Ribs is perform'd by the *Proper* and *Common* Muscles of the *Thorax*: The First have their Rise and Termination confined to the Parts Composing its *Parietes*: The Other, notwithstanding their Relation to other Parts, yet chiefly respect This: Of the *Common* Muscles some are *Principal*, immediately moving This, together with those Parts from which they are derived: Others are *Auxiliary*, which by moving the Contiguous Bodies, Contribute to the better performing the Grand Motion: Thus the Elevation of the Shoulder-Blades is required in violent Respirations, without which the *Musculi Serrati* (Tab. 20.) (which spring from the *Scapulae*) (Tab. 29. V. W.) could not Act; hence it happens that Respiration is Interrupted when the Arms are in Action, by reason the *Scapulae* at that time engage all their Muscles (especially the *Serrati T. 20.*) to render them Stable; and the Extension of the *Vertebrae* of the Neck becomes necessary, to the end the *Musculi Scaleni* (Tab. 18. B. B.) may Raise the Upper Ribs.

The *Proper* Muscles of the *Thorax* are the *Intercostales Externi* and *Interni*, (Tab. 26. Fig. 1.) the *Triangulares*, (Tab. and Fig. ead.) the *Serrati Superiores* and *Inferiores Postici*, Tab. 28.

The *Principal Common* Muscles, are the *Scaleni*, (Tab. 18.) the *Subclavii*, Tab. 20. the *Serrati Majores* & *Minores Antici*, (Tab. ead.) and the *Sacrolumbales*, (Tab. 29.)

The *Auxiliary* Muscles are such as Raise the *Scapulae*, and draw them Backwards, and those which Extend the whole Spine.

The Cavity of the *Thorax* being dilated in the manner above mention'd, the Ambient Air necessarily rushes thro' the *Aspera Arteria* and *Bronchia*, into the *Vesiculae* of the Lungs, whereby their whole Substance becomes Distended; and this we call Inspiration.

In Expiration, the Air contain'd in the *Vesiculae* of the Lungs, is Excluded; in this Action the Lungs are not merely Passive as in the Former, but the Elasticity of the Ligaments of their *Bronchia*, draw their Small Cartilages over each other, and Conduce to the Expulsion of the Air contain'd in their *Vesiculae*.

This Alternate Diastole and Systole of the Lungs and *Thorax*, bears an Analogy to a Pair of Bellows, whose Two Boards being drawn from each other, the Ambient Air necessarily rushes in between them, and Fills the Internal Space enlarg'd by the Deduction of their Sides; which Air is again Expell'd from thence, by Approaching them towards each other.

The Inducements the Author of Nature had to Frame this Pulmonary Organ, are many; by this the Aerial Particles pass to the Mass of Blood, which Rarefies, Subtilize and render it fit for those Elaborations it afterwards undergoes: By these the Tenacious *Serum* of the Blood is Attenuated, and the whole Mass rendred fit for Motion; the Effects of which are Evident in those Rhumatick *Asthmas* and other Cases, which Oblige some to leave this Town for a Clearer Air.

The Lungs are the Intermediate Passage between the Two Ventricles of the Heart, whereby the whole Mass of Blood passes thro' their Large Blood-Vessels in an equal Rapidity and Quantity, with that of all other Parts of the Body besides, and do by this means discharge the Blood of a great Quantity of its *Serum*, by *Halitus* in Expiration; wherefore the Accurate Dr. *Tyson* Reckons them among the Number of Glands.

This Alternate Action in which Respiration consists, is Necessary, to the End the Blood may pass the Lungs, whose *Vesiculae*, if they were constantly Distended by the Inspired Air, the Extremities of the Pulmonick Blood-Vessels would be Compress'd; and on the contrary, if these *Vesiculae* were Collaps'd (as after Expiration) their Blood-Vessels would be consequently Corrugated; but by this Vicissitude they become Permeable, and the Blood easily passes their Extremities.

We have Traced the Aliment from its First Reception till it is Elaborated into Blood, and pursued in its Motion and Circulation thro' its several Channels. We ought next to take a View of the several Liquors or Fluids separated from it in its *Tour*. All Animal Juices except the *Chyle* are separated from the Arterial Blood, which common Material in its Percolation in the Brain and Nerves, yield the Contents of their Fibres; in the Glands of the Mouth and Throat, the *Saliva*; in the *Mammæ*, the Milk; in the Kidneys, the Urine; in the *Testes*, *Sperm*; (not to name the Sweat, Mucilage of the Joints, &c.) and thro' the Universal Body, a Copious Quantity of *Lympha*; which is not applied to any distinct Use in the *Animal Economy*, but is all discharg'd into the Great Cystern or Receptacle of the *Chyle* and Subclavian Vein, and so Refunded into the Refluent Blood.

The Doctrine of Secretions is the last and only remaining Part of those Natural Functions, which are directed to the Preservation and Subsisting of the Individual. For the Nature and Properties of these Liquors, their Use and Office, and the peculiar Structure adapted for the Percolation of one, and excluding the rest; we must remit the Reader to the Description of the Organs themselves, contenting our selves here with the Theory of the Origin of the *Lympha*, and Secretion in General.

The Knowledge of this Animal-liquor call'd *Lympha*, and the Ducts which Convey it, is owing to the Industry and Searches of this present Age. But whether *Rudbeck*, *Bartholine* or our Countrey-man Dr. *Folwie* ought to carry the Honour of the Discovery, I shall not pretend to decide. But the Rise, Course, and other particular Circumstances needful to inform us of their Use, and the Design of Nature in the Fabrication of these Ducts, has not been hitherto, at least fully, Demonstrated. Some have pretended to derive these Ducts from the Nerves, others from the Membranes or Tendinous Parts of the Muscles; but these are Impertinencies scarce worth a serious Refutation.

The diligent *Melphighius* in his Epistle to the *Royal-Society*, is solicitous in enquiring whether they are not Excretory-ducts to Export the Juice Secreted in the Conglobate Glands, since there is none of these Glands so inconsiderable to be found which has not its Lymphe-ducts belonging to it, as well as its Nerves and Blood-Vessels. After several Observations premis'd, he concludes they Arise in exceeding Minute, and scarce perceptible *Sirculi*, from the Lesser Glands, which afterwards are United to those Arising from other Glands, forming Greater Trunks, and so proceed till they Empty themselves into the Common Cystern of the *Chyle*. I shall not repeat the Reasons or Experiments of that Curious Gentleman to sustain his Opinion, which mainly amounts to this, That in pursuing these Ducts, we cannot by the most exact Scrutiny, or any Art yet known, Trace them further. But we must crave leave to differ from him in this Point, and perhaps the Reasons we shall offer, will be sufficient to justify our Dissent, and give a more clear and satisfactory Account of the First Source of this Fluid.

The Glands I must confess have a great Concern in preparing the *Lympha*, insomuch that no Lymphe-duct can absolve its Course without Touching on them; and their Necessity appears yet further, while we see other Lymphe-ducts, (when the main Trunk passes by,) yet emit several Lateral Branches which Insert themselves into these Glands, and after being remitted from thence, are rejoin'd to the Former Trunk (App. Fig. 14.) Besides these Lymphe-ducts which Enter the Glands, are frequently divided into several Branches; which make their Exit again divided, and after approaching each other, join into one Current, *ib. Fig. 13.* But however Important the Glands may be, I think they are far enough from being their Source.

The Glands of the Mesentery have their *Lacteals* which Import, and others which Export the *Chyle* from them. We shall find the Case of these Vessels to be entirely Parallel; every Lymphatick Gland we have yet been able to Discover having both Species of Ducts, the one to Import, the other to Export the *Lympha* from them; whence it is probable the Lesser not differing from the Greater in Structure, but Magnitude only, they serve to Transmit the *Lympha*, and not give it its First Rise: This will be still more evident, if we consider

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consider the Great Communication between the Blood-Vessels and these Ducts.

The First Origination and Extremities of these Lympheducts, are too Subtile and Fine to be discern'd by the Eye, even Assisted by the Microscope, and must give Room for Suspicion and Conjecture. The Arteries and Veins, we have above Demonstrated, are but one continuous Reflected Tube: For the Truth of this Assertion, in the Transparent Parts of Animals (*App. Fig. 4, 5.*) we have the Evidence of our Senses; and that the same Continuity is kept thro' the whole System of the Body, no Rational Man who will please to Reflect on the Uniformity of Nature, can with any Pretence of Reason doubt. Now as these Vessels Communicate with each other, and admit a Prompt Passage of Air, Tincted Liquors, Mercury, &c. from each to other, so by some Experiments we find they have with the Excretory-ducts, and *Vice-versa*, those Liquors which we can convey into the Excretory-ducts after Death, will pass from them into the Blood-Vessels and Lympheducts, which Experiment I have remark'd (*Tab. 43. Fig. 5.*) as an Objection to those who suppose Valves in the beginning of the Excretory-ducts.

From these Demonstrative and Convincing Experiments, we may conceive the true Origin of the Lympheducts, is from the Extremities of the Blood-Vessels; and their Office to carry Back the superfluous Serum, which is more Copious in the Arteries, than is perhaps convenient in the Veins, where the Progress of the Blood is Slower, and the Quantity much greater. This Rise of the Lympha is still more clear, if we consider in some States or Habits of Body, when the Crasis of the Blood is deprav'd, some Parts of it pass this way, and the Lympha is Ting'd by it; as it happens by Injecting Water by the Arteries after Death, when Part of the Blood still remains in its Vessels, you will see the Lympheducts fill'd with a Bloody Water.

This Origination of the Lympheducts from the Extremities of the Blood-Vessels, we don't take to be altogether immediately from their Sides, as we do that of the Secretory Tubes, (*App. Fig. 7.*) but that they have a Double Origin, the one from the Extremities of the Arteries, and the other from the Cells or Tubes which contain the Nourishment of the Parts they Arise from: By this means not only the superabundant Serum of the Blood in the Arteries, is carried off before it Arrives in the Veins, but the superfluous Nutritive Juice also, is return'd with the Lympha.

In those Parts where we find the Passage of the Blood between the Arteries and Veins very Patent, as in the Spleen and Penis, the Lympheducts Arise from their Vesculae; as has been Observ'd in the Former by the Accurate Nuck, and by my self in the Latter.

The like Origin of these Ducts may be Observ'd from the Spermatick Veins of the Testes and Ovaria, in which the Blood returns very little Divested of its Serosity, to the end its Globular Parts may the better Ascend in those Veins, with a Less Proportion of Serum.

These Ducts Empty themselves into the Vesculae of their Glands, as is Represented (*App. Fig. 13, 14.*) from whence the Exporting Ducts Arise, and carry the Lympha on to the next Gland or Thoracick-duct, (*App. Fig. 11.*) and so to the Subclavian Vein. Thus we find the Motion of the Lympha, Chyle and Nutritive Juice, is propell'd by means of the Systole of the Heart, by which all the Secretions of the Animal Fluids, are in like Manner carried on.

In the Seventh Figure of our Appendix we have Express'd the Secretory Tubes Arising from the Venous, as well as the Arterious Part of the Sanguineous Channel before its Inflection; because we find there is a Transfit from the Veins into these Vessels; yet in my Opinion most of them Arise from the Artery, where it Commences to grow Conical, where the Sides of the Vessel thro' the Efforts made by the Parts of the Blood propell'd, receive a more direct Pressure than in their Cylindrical Extremities, and the Particles Adapted to their Pores, are driven into the Tubes deriv'd from them.

By this Scheme, the Origin of the Lympha, and the Manner of Secretion, is well enough Explain'd. But why the Saliva is separated in the Parotid Maxillary and Sublingual Glands, the Bile in those of the Liver, the Urine by the Kidneys, &c. must be deduc'd from their peculiar Structure; the Magnitude, Figure of their Pores, and Various Dispositions of their Arteries, having a mighty share in these Operations. Thus we may Observe the Arteries of the Testes, have a long and Flexuous Progress, and contrary to the ordinary Method of Nature, are smaller at their Origination from the Aorta, than in their Trunks after a farther Descent, as we have Noted (*Tab. 45.*) all which conduce to abate the Impetus of the Blood, before it Arrives in the Testes. On the other Hand the Current of the Blood to the Kidneys, (by the Largeness, Short and Streight Course of the Emulgents, and their Vicinity to the Left Ventricle of the Heart,) is very Rapid, which discharges a great Quantity of Urine, soon after the Use of Chalybeat Waters, or other plentiful Drinking, whilst it is infinitely more slow in the Salival Glands, Pancreas, Liver, &c. We shall not here recite any further Particulars, hoping

the Reader will peruse our Tables and Discourse of the several Organs.

Having done with our Doctrine of the First Order of Natural Functions, we proceed to the Second, or those which serve for the Propagation of the Species; which Naturally divides its self into Two Parts, (*viz.*) Generation, and Accretion, or what concerns the Fetus in its Formation, and by what means and steps it's carried on to an Adult State. Since Animal Bodies are Transient and Temporary, the Author of Nature has endued them with the Power of Propagation, and a Set of Proper Organs to continue their Species, and furnish a constant Supply of new Individuals. From the Difference of which Organs of Generation Arises the difference of Sexes.

All Animals have been Divided into Viviparous and Oviparous, till Dr. Harvey remov'd the Distinction, by Demonstrating all Living Creatures to derive their Original from Eggs, with this Difference only; in one the Fetus is perfected within, and in the other without the Mothers Body. This Doctrine of that great Man has since been fully evinc'd by the repeated Dissections, Observations, and Experiments of Later Anatomists: No Species of Fowls, Fishes and Quadrupeds are found to want them: The Fetus being sometimes found in the passage between the Ovarium and Uterus, and the Alveoli deserted by them, are sufficiently discernable in all Animals after Impregnation; so that the Existence of These cannot be doubted, or that there is a perfect Conformity between the Pullus in Ovo, and the Fetus in the Womb. But here we must distinguish the Essential and Constituent Parts, from those which are only Alimentary and Accessory. It is the Cicatricula alone in the Eggs of Fowls, in which reside the Rudiments of the Fetus, whilst the Vitellus and Albumen prepare and supply its Nourishment; both bearing an exact Analogy to the Lobes and Plantula Seminalis in Vegetable Seeds. The Seminal Vescula or Ovum found in the Testes of Women, &c. agrees in every respect with the Cicatricula, and the other Parts are unnecessary, because the Fetus is nourish'd by Aliment supplied from the Mothers Body. Since the Discovery of these Eggs, the Ancient Doctrine that the Fetus was Form'd from the Commixture of the Male and Female Seed, has been by all Rejected, and that Liquour which has been taken by all preceding Ages for Seed in the Latter, is found to be only a Mucous Matter, Secreted from the Glands of the Vagina, (*Tab. 51. F. 3. C.*) and discharg'd without the Body; which in Mares, Cows, and many other Animals is in much greater Quantity, than is possible to be contain'd in their Testes.

Tho' Generation *ex Ovo* may be justly reputed among the Modern Improvements of Anatomy, yet this did not altogether escape the Notice of the Sagacious Hippocrates, who in his Book *De Natura Pueri*, informs us, the Embryo after Conception is Included in a Membrane, exactly resembling an Egg without its Shell, and describes the Rudiments of the Umbilicus and Placenta, with its Plexus of Blood-Vessels, and the Pellucid Liquor of the Amnios after the same Manner as Represented (*Tab. 57. Fig. 2.*) This Accurate Observation, he acquaints us he made from an Abortion artificially procur'd within Six Days after Conception, to preserve the Reputation of an Incontinent Wench; which remarkable Passage (not ordinarily taken Notice of) was shewn me by my very Ingenious Friend Dr. Fern. Much of the same Age or something more, and agreeing with the Description of Hippocrates, are the Secundines which the Learned Dr. Hannes keeps among his other Anatomical Collections.

Upon the Invention of these Ova, De Graaf and Others, who have successfully employ'd themselves in their Enquiries on this Subject, began to Erect an Opinion, That the Female only furnish'd the Matter of the Fetus, and the Male serv'd to Actuate it by its Prolifick Influence. This Opinion, which derogates much from the Dignity of the Male-Sex, prevail'd till *Monf. Leeuwenhoeck* by the Help of his Exquisite Microscope, in which he has been well pursued by Mr. Melling, detected Innumerable small Animals in the Masculine Sperm, and by this Noble Discovery, at once remov'd that Difficulty, and added much to the Theory of Generation: In his Letter to the Royal-Society, he Acquaints them he had observ'd Incredible Numbers of these Animalcula in the Testicles of Frogs, so slender, as not to exceed the Thousandth Part of a single Hair, with a Head proportionably larger than the rest of their Body, all Variously moving to and fro; That he had found the same in the Testicles of all Animals, which he had Inspected; and in another, he gives them an Account, That in the Spawn of a *Cabelian* he had found them to be still Lesser, and more than Ten Thousand Swimming about in a Portion of Seed, not exceeding a Grain of Sand; and pretending to find by a Formal Computation all the Animals contain'd in the Lactes of this Fish, to exceed more than Ten times the Number of Men on the Surface of the Earth. Fecundation he esteems to proceed from one of these Numerous Animalcula, after Ejection, striking thro' the Pores or Perforations on the Sides of the Ovum, and Lodging it self in the Cicatricula, which is dispos'd to Receive and Nourish it.

From this surprizing Discovery, it is evident That

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no *Aura Seminalis*, or Influx of Active Spirituous Matter do's Delineate the *Fetus*; and that Observation of *Malpighius* Illustrated, That before Impregnation, no *Vestigia* of the *Pullus* could be found, and yet in some few Hours after, it is distinct and visible. Having thus taken a short Prospect of the Materials, we must proceed to the Order and Progress of Generation, from the Inchoation, till the Perfection of the *Fetus* in the Womb, and its Exclusion, and thence till its full Growth, or Dimensions prescribed by Nature to the Species.

The *Arteria Spermatice* in Men bring the Blood to the *Testes*, in whose Convolutions, it is Prepar'd and carry'd by the *Vasa Deferentia* to the *Vesiculae Seminales*, where it is Lodg'd till in the Time of Coition, it is Injected into the *Vagina Uteri*. The Manner of the Erection of the *Penis* in applying it to the Transverse Ligament of the *Ossa Pubis*, by the *Musculi Erigentes* and the Constriction of the *Corpus Cavernosum Urethrae*, by the *Musculi Acceleratores*, to Stop the Refluent Blood, and Inflate the Bulb and Cavernous Bodies, I shall wave Repeating, having amply Describ'd this Artifice, in the *Appendix* to my *Myotomia Reformata*.

The *Semen* Injected into the *Vagina* of the Woman, is Convey'd to the *Ovaria*, thro' the Womb it self and the Fallopian Tubes; which, in the Time of Coition, by means of their Reticular Structure, are Inflated and strictly Embrace them. We have Describ'd the Manner how the Foliated Expansions of the Left Fallopian Tube, Embrace the *Ovarium* on that Side, and are Distended by the Refluent Blood from the *Vagina*, whose Veins being Compress'd by the *Penis* in Coition, all, or the greatest Part of its Blood, passes up by the Spermatick Veins, (which Inosculate with the Hypogastrick) and the Distended Tubes are Incurvated by the Broad Ligaments of the *Uterus*, and the *Fundus Uteri* being Distended also, and at the same Time the External Air Pent out by the *Penis*, a free Passage is left for the *Semen* to the *Ovarium*. This I prefer as a more Compendious way of Conveying it, than either thro' the whole Mass of Blood, which must in my Opinion too much alter it, or thro' the Porous Substance of the *Uterus*, as others would have us believe. Nor can I conceive why any Man should scruple to think these small Animals may pass some Pore in the External Membranes, as they do in Frogs, Fish, &c. where the *Ovula* are ejected out of the Female, before they are Impregnated by the Male, rather than suppose they should pass by the Spermatick Arteries to the *Ovarium*, after several *Circulations* thro' the whole System of the Body. The immediate and direct Passage of the *Semen* is very much confirm'd, by comparing the Appearances of these Uterine Parts in Fowl, especially Hens.

One, or sometimes more of these *Ova* happening to be Fecundated at a Time, are distended and break the *Pedunculi*, by which they are affix'd, and leaving their *Folliculi*, pass into the Fallopian Tube, which resembling the Ovi-ducts in Birds, receive and convey them to the *Fundus Uteri*. The manner how they are carry'd on is not less Mechanical, than most other Operations in the *Animal Oeconomy*; for as the Turgescence of the *Penis* first remits in its Extremity, so do's this exactly after the same manner, and by Consequence drives the *Ovum* contain'd in it to the *Fundus* of the Womb.

After the *Ovum* is arriv'd here, it Fluctuates about some Time without being fix'd, and receives Nourishment by Apposition only, till at length some of its Vessels begin to Germinate, and afterwards Inosculate with those of the *Uterus*. The Arteries of the *Ovum* protruding themselves into the Veins of the *Uterus*, and the Veins *Vice-versa* into the Arteries, from which mutual Intertexture of the Vessels, the *Placenta* is compos'd.

By Intervention of the *Placenta* and Umbilical Vessels, the *Fetus* receives Blood from the Mother, and a common Circulation is continu'd, the Particulars of which, and the Difference of its Course from the Circulation after the Birth, is Describ'd in the Explication of the following Tables.

The Aliment for Nutrition of the *Fetus*, seems to be a sort of Chylous Juice separated by the Glands of the *Placenta*, and reposit'd in the Capacity of the *Amnios* (Tab. 55, 58.) which Grows considerable for its Quantity in the Second and Third Month, and the *Fetus* begins to take it in at its Mouth, for some time before its Birth, whence it is convey'd to the Stomach and Intestines, and Part passes into Chyle and Blood-Vessels, according to the Ordinary Method of Nature in an Adult; the remainder Composing the Excrement we find in the Intestines of the *Fetus*, and sometimes Floating in the Liquor of the *Amnios*. Besides which, the *Mammillae* of Recent-born Infants of both Sexes, contain a Serous Milky Liquor, which is discharg'd into the Liquor of the *Amnios*.

After the *Fetus* has lain Nine Months in the Womb, it Arrives at such a Magnitude as makes it uneasy both for want of Room and Aliment. Besides the Excrements voided from its *Anus* foul the Contents of the *Amnios*, and molest the *Fetus*, which by its frequent and strenuous Struggles, shakes the *Placenta*, and breaks the slender Vessels, which Connect it to the *Uterus*; from the Conspiring

of which Circumstances, Parturition must necessarily follow.

After the Secundines are remov'd, and the Infant first Opens its Mouth, the Ambient Air rushes into the Lungs, and Distends the *Vesiculae Aerae*, which afterwards remain in some measure Inflated, because the Extremity of the *Bronchia* which Open into them, are much Less than the *Vesiculae* themselves, and some Part of the Air will still continue in them; whence they Gain a greater Specifick Lightness, and Swim in Water. The Pulmonick Blood-Vessels which before the Birth lay Collaps'd, have their Trunks and Ramifications Extended, and admit the Blood to pass thro' them; the *Foramen Ovale*, and *Canalis Arteriosus* not lying in a Direct Line to the Propulsion of the Blood; these Passages in Tract of Time, become Obliterated, and all the Blood from the Right Ventricle of the Heart, passes thro' the Lungs, before it can Arrive at the Left. These Alterations of the *Oeconomy* happen after the *Fetus* is brought into the World, and Expos'd to the External Air.

Having seen how the Infant is Generated and Usher'd into the World, with the Alterations which attend its Birth, we must consider next by what means Nutrition and Accretion are Effect'd, or the Steps by which it proceeds insensibly from such small Beginnings, to its due Size and Dimensions. It is certain, that the Bodies of *Animals* are nothing else than a Vascular Compages, and all their Parts Exist in the Fecundated *Ovum*, which by the Accession of New Matter, are only Distended and become Visible. From which Consideration we may infer, That the Augmentation of the Body is made by a Simple Extension of all the Tubes, Vessels and Cells; which when they will no longer recede to admit the Nutritious Particles, to be Lodg'd in the Interstices of the Fibres which Compose their Parietes, and there remain no more *Osfiola* in the Sides of their Vessels, by which the Fluids can Open a Passage, the Body is Arriv'd at the utmost limits of its Growth. This Tenseness and Contiguity of the Fibres which refuses to admit more of the Nutritious Parts, is that which Determines the Magnitude of *Animals*, and the same Hypothesis will serve to Explicate the differing Sizes of Individuals of the same Species. In this Manner the Bones Arrive at their full Dimensions, and then preserve their Stability and Figure, whose Accretion and other Accidents Arising from its Vitiations, are very well Explain'd by Dr. *Havers* in his *Osteologia*. But besides the gradual Increase and Formation of the Tubes and Vessels, there is a necessity for a Supply of Fluids to maintain a Plenitude, with a constant Reparation of the Blood and Humours to prevent the Collapse: Thus in an *Atrophy*, the great Emaciation and apparent Loss of the Substance, proceeds from a want of Proper Fluids to preserve the Arteries, Veins, Lympe-ducts, &c. and other Channels of the Body in their due Distention. I must confess a Corrosive Salt in some deprav'd Crases of the Blood, may consume the Stable and Organick Parts, as in the *Spina Ventosa*, and such like Cases, where the Bones sometimes (as I have seen in one of the Fingers) are wholly Dissolv'd, while the External Teguments have not been injur'd; but in this Case, contrary to the other, the Loss is Irreparable. Hence Appears the necessary Distinction between Accretion and Nutrition, the First being an Accession to the Organical Parts, by New Matter Intruding into the Interstices of their Fibres, and there remaining; and the Latter only a Supply of a Proper *Pabulum* to the Fluids, to preserve them in a due Temper and Proportion. The First being fix'd and permanent, and scarce alter'd once in the Term of a Man's Life, and the Last in a perpetual Succession and Flux; which therefore requires the superfluous Part of the *Succus Nutritivus*, not retain'd in the Proper Tubes and Cells to be Infund'd into the Lympe-ducts, by which it is again return'd to the General Mass; the Manner of which we may Conceive by Fig. 6. of the *Appendix*.

From the *Natural*, we pass to the *Animal Functions*: That the Brain and Nervous System are the Common *Medium* of Sense and Motion is uncontested; but the manner how the Impressions are convey'd from the External Organs to the *Sedes Animae*, and *Vice-versa* from thence to the Organ, and how a Material Substance can affect and be affected by an Immaterial, is Obscure and scarce to be conceiv'd. Wherefore waving all Precarious Hypotheses, I shall confine my self to the Description of such *Phaenomena* as are Matters of Fact, and undeniable, and leave the Reader at Liberty to erect what System he pleases. The Seat of Sense is the Brain, whose Nervous Dispensations are the Intermediate Bodies between it and the Organs, on which the External Objects act. When the Impression is made by the Object, and receiv'd into the Organ of Sense, it is convey'd from thence with the same Type or Character, by an Agitation of its Nervous Expansions and their continued Trunks, to the common Sensory: This is common to Men and Brutes, and is by *Des Cartes* made the First Degree of Sensation: The Second is the Perception of the Soul attending that Motion, which immediately follows the former Degree, by reason of the intimate Connexion of the Soul to the *Sensorium Commune*. The Third comprehends all those Judgments which we form by the Occasion of those Motions: Hence

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it follows, all Corporeal Objects are only Perceivable by us, in as much as they affect the Nerves expanded, in such and such Organs. This is the general Idea of Sensation so far as can be explain'd without Engaging in particular Schemes.

Before we enter on the Consideration of the External Senses, we shall offer a short Account of the Structure of the Brain and Nerves in general. The *Cerebrum*, (Tab. 10. Fig. 1.) *Cerebellum* and *Medulla Spinalis* (Tab. and Fig. ib.) are evidently compos'd of Two Parts: the first which appears on the Surface of the *Cerebrum* and *Cerebellum* is of a Cineritious Colour, and is call'd the Cortical and Glandulous Part; the other or internal is Whiter and Harder, and is call'd the Medullary, Callose, and Fibrous Part: This Order is inverted in the Spinal Marrow, where the External Part is Callose and White, and it's Internal, Soft and Cineritious. The Cineritious or Cortical Part of the *Cerebrum* is remarkable in those Turnings and Windings which are deeply divided by the *Pia Mater* within the Body of the *Cerebrum* (Tab. 10. Fig. 1. C.) from whence it appears to have a very large Surface. The like Contrivance is observable in the *Cerebellum*; the outward Appearance of the *Sulci* of which differ from those of the *Cerebrum*, and are ranged in Parallel Lines according to its Length, as express'd Tab. 7. Fig. 2. Besides the Cineritious Part of the *Cerebrum* plac'd on its Surface, it has still other Cineritious Bodies or Protuberances added to its *Corpus Callosum*; as the *Corpora Striata*, (App. Fig. 30. Δ Δ.) *Nates* and *Testes*. (Tab. 10. Fig. 1.)

In a Horizontal Section of the *Cerebrum*, its Cortical and Medullary Parts appear, as Represented App. Fig. 30. In a Transverse Section of the *Cerebellum*, an Arboreous Disposition of the latter appear within the former (Tab. 10. Fig. 1.) The Cineritious Colour of the Cortical Parts of the Brain arises from the Number and Contortion of its Proper Blood-Vessels, which pass according to the Length of the Fibres in the Callose and White Part.

In Viewing the Surface of the Cortical Parts, it appears Compos'd of a vast Number of small Glands of a Depress'd Oval Figure, from each of which Spring the Medullary Fibres, which compose the Callose or White Part; all which make the *Centrum Ovale* of *Viessens* (App. Fig. 30. n n.) before they compose the *Crura Medullæ Oblongatæ*, (App. Fig. 29. B B.) In this Progress, the Medullary Fibres of the *Cerebrum*, give Originals to the Olfactory and Optick Nerves: At the Conjunction of the *Crura*, the Third Pair of Nerves arise, App. Fig. 28, 3, 33: soon after the Annular Process or *Pons Varolii*, (which partly arises from the *Cerebellum*) (App. Fig. 28. s s) is join'd with the *Crura*. In this Part of the Conjunction of the Medullary Parts of the *Cerebrum* with the several Processes of the *Cerebellum*, the Fourth, Fifth, Sixth and Seventh Pair of Nerves arise: and at the Beginning of the *Medulla Oblongata*, (whence Spring the Eighth and Ninth Pair of Nerves,) there is a complete Union of all the Medullary Parts of the *Cerebrum* and *Cerebellum*; Where a Cineritious Part may be seen in its Middle, as appears App. Fig. 29. d d. This Inversion of the Order of the Callose and Cineritious Parts, is kept thro' the whole *Medulla Spinalis*.

From what has been above Observ'd, it appears, the Surfaces of the Cortical Parts of the *Cerebrum* and *Cerebellum* are much larger than those of their Medullary, consequently each Gland which helps to compose them, must be larger in its Diameter than the Medullary Fibre, which arises from it. This Consideration will lead us still farther; for since it's plain, the Surfaces of the Medullary Parts of the Brain and *Cerebellum*, are much larger than they are afterwards in the *Medulla Oblongata*, therefore the Fibres which compose them, must necessarily be thicker in their Diameters, at each Gland, than they are afterwards in their Progress to the Beginnings of the Nerves, where they are considerably contracted, and frame the *Apex* of a Cone.

Here we must not omit to take notice, that all those Medullary Fibres inservient to Motion in general, and the Organs of Tasting and Touching, are very much contracted at the Beginnings of their Nerves, without the Body of the Brain and *Medulla Spinalis*; and on the other hand, all those Medullary Fibres employ'd in the Organs of Seeing, Hearing and Smelling are contracted, or have the *Apices* of their Cones within the Body of the Brain: Thus the Nervous Fibres concern'd in Motion in general, and such as are Mov'd by the Contact of Gross Objects, are lessen'd between their Originals and several Divarications, *extra Cerebrum*; but those affected by the Mediation of Light and Air, within the Brain.

The utmost I could yet observe in Viewing the Nervous *Fibrillæ* with a Microscope (whether composing the *Corpus Callosum* of the Brain, or the Bodies of the Nerves themselves) is, that they are Form'd of a Reticulated Compages of Fibres; which in the latter appear Globular; but in the former or *Corpus Callosum* (by reason of the irregular Section, or Expanding a Thin Divided Transparent Part of it on the Object-Plate of the Microscope) it appears Reticulated, and the Interstices of its *Rete* of various Angles. This Structure of the Nervous System, seems to Plead against those Hypotheses of the Animal Functions, Founded on the Motions of the Spirits or Fluids, Deriv'd immediately from the Brain, and

Transmitted by the Nervous Channels. We shall here only present the Reader with an Anatomical Plan of the Organs of the External Senses, and shew how Objects may be Impress'd on them and Convey'd to the *Sensorium Commune*, and leave him to Contemplate on the Elegant Fabrick of the Brain, whose particular Contrivances have hitherto escap'd the Discovery of the most Sagacious Enquirers.

The Five External Senses, are so many differing Species of Perception from the Applications of Bodies to their several Organs; either Immediate, as in Feeling and Tasting; or thro' a Proper Medium, as in Smelling, Hearing and Seeing. The Sense of Feeling is Extended thro' the whole Body, except some few Parts, as the Bones, Cartilages, &c. but chiefly Resides in the True Skin, whose Structure, so far as it relates to this Sense, is as follows. The *Cuticula*, (Tab. 4. Fig. 1, 2, 3.) (which is a common Covering to the whole Surface of the Skin) being Remov'd, certain Papillary Protuberances Discover themselves, which View'd with a Microscope (Tab. 4. Fig. 6.) appear made up of many Roundish Sudoriferous Glands, with a vast Number of Nervous *Fibrillæ* Expanded on their Surface: This Uneven Papillary Surface is necessary, to the end those *Fibrillæ* may be the more Expanded and Apply'd to Tangible Objects; so that the Figure, Modification and other manifest Qualities may be Discern'd, and the Impressions Convey'd to the Common Sensory, by the Mediation of their Nerves. Since the Extremities of the Fingers and Thumbs are (for many Reasons) necessary Parts to be Endued with an exquisite Sense of Feeling; therefore the Order of these *Papillæ* are there Converted to a Contorted Series, which appear like so many *Rugæ* under the *Cuticula*, as is Represented in the last Mention'd Table, Fig. 4. The *Cuticula* here, as well as in other Parts of the Skin, is a necessary Medium between the Object and the Organ; but when it Grows very Thick, as in some Laborious Mechanicks, it becomes an Impediment. From the vast Number of these Nervous Filaments, any Solution of Continuity of the Skin it self, is more Painful, than most of its subjacent Parts.

The Fabrication of the Tongue, its Papillary Surface, and the Manner of its Application to Objects, bears a great Similitude to that of the Skin now Describ'd, in so much that some have reckon'd the Sense of Tasting a Species of *Tactus*. The Structure of this Part, as well as its Coverings and Papillary Bodies, are Represented Tab. 13. where Fig. 2. Shews the External Membrane, in which the Papillary Bodies lying under it, appear variously Figur'd, some Conical, others Round, and others with their Extremities Forked. In some Animals these *Papillæ* are externally Large, and their Extremities Cartilaginous and Horny, but in Humane Tongues it is far otherwise; the Outward Membrane here being very Soft, the *Papillæ* Numerous and Small, and appearing Villous to the Naked Eye. This Membrane being Rais'd (after sufficient Boiling the Tongue) the next which offers, is more Spongy, Softer and full of Blood-Vessels, Tab. 13. Fig. 6, 7. This is Perforated by the many Nervous *Papillæ*, immediately Plac'd under it: (Tab. 13. Fig. 8.) the Tops of which are afterwards Receiv'd in the *Vaginulæ* of the External Membrane. These *Papillæ* cleave to the Flethy Fibres of the Tongue, and are of various Sizes and Figures as above Noted. In the Interstices of these *Papillæ* are Plac'd Divers Salival Glands, the Excretory Tubes of which, Discharge themselves by certain Apertures; (Tab. 13. Fig. 2. G G.) whereby the Villous Covering of the Tongue is Moistend, and the Saporiferous Particles are readily Admitted to the *Corpora Papillaria*, whose Nervous Expansions (on their Surface, like those of the *Cutis*) Transmit the several Impressions (made by Objects of Various Figures) to the Common Sensory, by the Mediation of the *Par Quintum*. Thus the Structure of the External Parts of the Tongue, Agree with that of the Skin, with this Difference, the former being Cloth'd (in Humane Bodies) with a very Thin Soft Membrane, and its *Papillæ* very Numerous, Less and more Extruded or Longer; whereas the *Papillæ Cutis*, are Larger, Shorter, and Cover'd with a more Dense Membrane or *Cuticula*. Hence the Tongue appears to be an exquisite Organ of *Tactus*. However the Sense of Taste principally Resides in the Tongue, yet we must Refer the Organs of Smelling hither, since Experience Shews us the former Sense cannot be Compleat, where the latter is Deficient.

The External Organ of Smelling is not Confin'd within the Cavities of the Nostrils, but is Compos'd of a very Large Glandulous Nervous Membrane, in like manner Extended within the Cavities of the *Ossa Frontis* (Tab. 89. Fig. 1. ib. Tab. 91. Fig. 2.) Fourth Pair of Bones of the Upper-Jaw, (Tab. 92. Fig. 1. E.) and in that Part of the *Ossa Sphenoides* composing the *Sella Turcica*, (Tab. 89. Fig. 2.) all which Open into the *Foramina Narium*. Besides these Cavities, the Nostrils are furnish'd with Divers *Ossa Spongiosa*, Describ'd, Tab. 92. Fig. 1. H. on which the same Membrane is Expanded. This Membrane is in a great Measure compos'd of the Extremities of the Olfactory Nerves, and is the Organ of this Sense, which receives the Impression made by the Odoriferous *Effluvia*, whether in Inspiration, as in the Proper Action of Smelling; or Expiration, as in Tasting, which happens in Mastication or Deglutition of the Aliment.

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What we have hinted concerning the Complication of Tasting with Smelling, will in some Manner be evinc'd, if we reflect on that Common Practice of Holding the Nose to avoid Nauseous Tasts: And when the *Foramina Narium* are partly Obstructed, (as after taking Cold) how little we Distinguish the Proper Tasts of some Things, especially such as are Odoriferous.

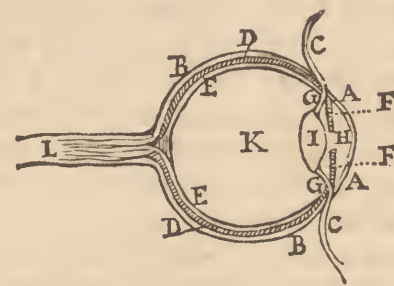
The Organs of the Fourth External Sense, are the Two Ears, by which the Various Sounds Impress on the Ambient Air, are Represented to the Common Sensory. The External Ear or *Auricula* (Tab. 12. Fig. 1.) is Compos'd of a Cartilage Cover'd with the *Cuticula* and *Cutis*; whose many Contorted Foldings, are Fitted for the Reception of the External Undulating Air, and Transmitting it to the *Meatus Auditorius*. The Winding Progress of the *Meatus* seems purposely contriv'd, to prevent some Inconveniences which might Arise, from the Violent Irruption of the Air thro' too Direct a Passage to the *Membrana Tympani*, plac'd at the farther End of it: (App. Fig. 15. e.) For the same Intent, the *Cerumen* or Ear-Wax, seems to be Separated by the Numerous Glands in the Membrane of the *Meatus*, to Infringe its Motion. The Air which thus Passes the *Meatus*, Shakes the *Membrana Tympani* more or less, according to the Various Impressions made on it *ab Extra*: The Long Process of the *Malleus* (App. Fig. 15.) which is Contiguous to this Membrane, is necessarily Mov'd, consequently the *Incus* which is Articulated with the *Malleus*, (App. Fig. 16. H, I.) and the *Stapes*, which is Articulated with the *Incus*, by the Mediation of the *Os Orbiculare*, (App. Fig. 17. H, I.) are all successively Mov'd by each other: Nor could any Tremulous Motions be Impress on the *Membrana Tympani* by the External Air, if the Cavity of the *Tympanum* it self had no Aperture, by which its Contain'd Air could Fluctuate, no more than a Drum it self would Sound if there were no Holes in its Sides. For this Reason a Passage from the Palate to the *Tympanum* is Form'd, (Vid. App. Fig. 8. NN.) By this Curious Artifice the Various Sounds Arising from the Vibrations of the External Air, are Modifi'd, and Articulatedly Represented to the Auditory Nerve, Expanded within the Winding Cavities of the *Labyrinth* or Three Semicircular Ducts and *Cochlea* (App. Fig. 17, 18.) by means of the *Stapes*, whose *Basis* immediately Covers the *Foramen Ovale* or Entrance to those Cavities, where the *Aer Insitus* or *Congenitus*, is said to Reside. This Air tho' call'd *Innate*, must Arise from that Contain'd in the *Tympanum*, and necessarily has a Communication with it, else we cannot see how the Vibrations made by the *Stapes*, should be Communicated to these Contorted Channels. Nor can it be suppos'd, the *Basis* of the *Stapes* has any loose Membranous Connexion to the Margin of the *Foramen Ovale* (which it must have, to keep out the Air Contain'd in the *Tympanum*;) Or that the *Stapes* adequately Closes that *Foramen*: Both which would meet with Equal Impediments from the Grosser Air in the *Tympanum*, pressing on the *Basis* of the *Stapes*, and hindring its Elevation.

The Small Muscles which move the *Malleus*, and that of the *Stapes*, like the Heart, Diaphragm and Muscles concern'd in Respiration, do their Office Inadvertently, and are Useful herein, as we have Represented them in App. Fig. 15, 16, 17. This Structure of the *Auricula* and Parts within the *Tympanum*, Prepare the Impressions made in the External Air, and Represent them to the Expansions of the Auditory Nerve; not unlike the Membranes and Humours of the Eye, Refracting the Rays of Light in passing to the *Tunica Retina* in the Eye, which falls next under our Consideration.

As the Air is the Vehicle of the Objects to the Two Former Organs, so the Light is to this. The Nature and Properties of Light, the Magnitude, Figure or Motion of Luminous Particles, as well as the Shape or Conformation of those Parts, which Affect the Organs of the other Senses, we omit as more Proper for the Disputes of the Schools than an Anatomical Discourse, confining our Theory of Vision to the Structure of the Parts.

In the Fabrication of these Organs, the Eye-lids or *Palpebrae* (Tab. 11. Fig. 1, 2, 3, 4, 5.) are none of the least Remarkable. The Upper is Elevated and Depress'd by Two Muscles, the External of which is Circular and call'd *Orbicularis*. (Tab. 12. Fig. 4.) This Draws the Upper Eye-lid down; the Internal is Straight (Tab. 11. Fig. 4.) and Pulls it up. By this Contrivance the Eye is not only Defended from Extraneous Bodies, but the Discharge of the Lachrymal Humour is Accelerated by the several Ducts, into the Internal Part of the *Palpebrae* next the Bulb of the Eye, Vid. Tab. 11. Fig. 5. The Eye it self is Spherical and Mov'd by its Proper Muscles, Represented in the last mention'd Tab. Fig. 7, 8, 9, 10. Its Membranes, Humours, and the Parts

which Compose it being Express'd Tab. 11. Fig. 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 22, 23, 24. we shall here only take Notice of its Structure, so far as Relates to its Action, and Describe the Plan made by a Section thro' the *Axis* of Vision, which will Conduce to the right Apprehending the Manner, how Objects are Represented in the *Sensorium Commune*.



AA, The *Tunica Cornea*, whose External Surface is a little more Convex than the Bulb of the Eye it self.

BB, The *Tunica Sclerotica* or *Dura*.

CC, Parts of the *Tunica Adnata* or *Conjunctiva*, which are Contin'd to the Internal Parts of the *Palpebrae*.

DD, The *Chorooides*, the Fore-part of which is call'd *Uvea*; Its Blood-Vessels Appear very Beautiful, when Injected with Mercury, and seem to Compose Divers Glandulous Bodies.

EE, The *Retina* or Expansions of the Optick Nerve, on which Objects are Depicted.

FF, The *Iris* which lies Loose or Floating in the Aqueous Humour.

GG, The *Ligamentum Ciliare*.

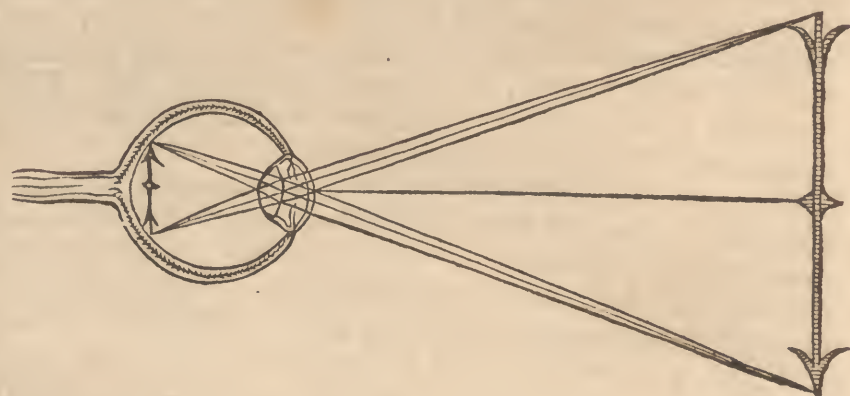
H, The Aqueous Humour.

I, The Chrystalline.

K, The Vitreous Humour.

L, Part of the Optick Nerve.

The *Tunica Cornea* Receives the Various Rays of Light proceeding from all Points of the Object, Collects and Transmits them thro' the *Foramen* of the *Uvea*, or Pupill, Refracting the Diverging Rays on each Side toward the Perpendicular. The Chrystalline Humour Receives the Rays First Inflected in the *Cornea*, and beginning to Diverge again in the Aqueous Humour, and Refracts them a Second Time; So that all the Rays proceeding from the same Point of the Object, by Passing thro' this Dense *Medium*, do Converge again, and Terminate in the same Point on the *Retina*. From this Refraction or Direction of the Rays of Light, to a Point, distinct Pictures or Images of Visible Objects are Represented on the *Retina*, as the Figures of External Bodies in passing thro' a Single Convex Glas on a Paper on the Wall of a dark Chamber, the whole will be better Conceiv'd by the following Figure, which Represents the same Section of the Eye, as the Former with the Luminous Rays passing thro'.



Thus the Rays in Passing thro' the *Cornea* and Humours of the Eyes, are Inverted, and the Image of the Object is so Depicted on the Concave of the *Retina*. How this Inversion is Reduc'd in the *Sensorium Commune* to a Right Perception, may be Accounted for in our Proper Knowledge of Things, in the same Manner, as we know when we hold a Stick in each Hand cross each other, that the Stick in the Right Touches such an Object, and that in the Left proceeding from the Object, and making Due and Various Motions of the Nervous Fibres of the *Retina*, which are Communicated to the Common Sensory by the Optick Nerves with the same Type and Character; we may reckon this Sensation to be not altogether unlike that of *Tactus*.

The Last of the Animal Functions which we should here speak of, is Muscular Motion, but having already Publish'd my Thoughts concerning that *Phenomenon* in my *Myotomia Reformata*, I shall not trouble the Reader here with a Repetition, since no Experiment, nor Observation (besides that mention'd in Tab. 64. Fig. 2. concerning the Fleishy Fibres) has since Occur'd, which should Add to those Conjectures, or Favour any other.

To the R E A D E R.



THE Fate of Authors, when they appear on the Publick Stage of the World, is extremely uncertain; Good or Ill Success, Reputation or Disgrace frequently depend more on the Humor and Prejudice of the Reader, than the Merit of the Performance. This hard Fortune of all Writers has made it Dangerous for any Book to venture Abroad, without some Harangue or Apology before it, to bespeak a favourable Treatment. For my Part, I have no Excuse to offer for not Complying with this reasonable Custom; but wholly resign my Cause to all Well-wishers, to the Advancement of Anatomy, the proper Judges of this Matter; whose Candor and Indulgence, I doubt not, will be a better Protection, from the Defects that shall be Discover'd in this Work, than any Reasons I shall be able to alledge in my Defence.

This Volume contains a General Description of the Fabrick of Humane Bodies, after the Manner of a Commentary on the Tables, which Represent their several Organs. The present and last Age, have been Industrious in making Discoveries in the Animal Machine, by Detecting the Structure of the Heart, and Artifice of the Circulation, the Origin and Course of the Lympheducts, the several Salival Glands and their Channels, the Texture of the Bones, and Medullary Cells, the Mucilaginous Glands of the Joints, the Organs and Process of Generation, the Organs of the External Senses, in reforming the Myology, (an Essay on the Last of These, with some Remarks on the Structure and Erection of the Penis, I some time since Publish'd,) all which the Reader will find in the following Descriptions, with my own Observations and Conjectures, which in many Places differ from the General receiv'd Opinions. Besides the History of the Natural Structure, I have thro' the whole Series of the Work, Inserted some Phænomena, I have found in Dissecting Morbid Bodies, and such Practical Instructions, as I hope will be Useful in many Cases, to the Chirurgical Operator.

The whole is dispos'd in this Order: In the first Hundred and Five Tables, after a Prospect of the Body, with the Teguments, Hair, &c. the Parts of the Head, Neck, Brain, Medulla Spinalis follow, and so proceeds to those of the Breast, Back, Loins, Lower-belly, Uterus with the Fœtus and its Adjuncts; next the Muscles of the Limbs, and lastly the Osteology. These Figures were Drawn after the Life, by the Masterly Painter G. de Lairefs, and Engrav'd by no less a Hand, and Represent the Parts of Humane Bodies far beyond any Exstant; and were some time since Publish'd by Dr. Bidloo, now Professor of Anatomy in the University of Leyden. I shall take the Liberty here to acquaint the Reader, That in these Tables I have added above Seven-hundred References, all which are Letter'd with a Pen in the several Figures; among which it is hardly possible, but Mistakes may occur in some Places, (by those who have Inserted them) which I hope will not be imputed to my Inadvertence. The Parts which in many Places had their Nomenclature barely annex'd, are here Copiously Describ'd; to which, as I before Noted, are added such Observations of the Male Conformation and Vitiated Structure, as may Illustrate the Pathology or History of Diseases, their Symptoms and Causes; I have likewise interspers'd several Remarks on the usual Method of Chirurgical Operations, with Directions for performing them in a more Exact and Successful Manner; and lastly given an Account of several Cases and Accidents rarely occurring, and not (at least commonly) observ'd by Authors. The Appendix is partly a Supplement to the preceding Tables, and partly a Correction of such Things as are not well Express'd; for Instance, The two First Tables present a Prospect or General View of the whole Body, both on the Fore and Back-side, Denuded of its Teguments, and Clear'd from its Fat; where the External Muscles with their Tendons, Fasciculi and Series of Fibres, Appear on the Surface. These are not Drawn by Invention, but are Touch'd on after an Original Cast from the Life in Plaister of Paris, which I have now by me. The Third Table contains a System of the Arteries Dissected from a Fœtus, with their several Trunks and Ramifications, Delineated from the Life, which I have also by me Injected with VWax; how much this differs from that Describ'd (Tab. 23.) may be soon Discover'd. In two other Figures of the same Table, are the Prospects of the Extremities of the Veins and Arteries, as they Appear in the Transparent Finns of a Grigg and Flounder, view'd thro' a Microscope. Here the Method of Circulation, the Continuity of the Venous and Arterious Channels, the Globuli passing them in an uninterrupted Current, is Demonstrated. In another Figure is Express'd our Conjecture of the Rise of those Ducts, which Export the Lympha and redundant Nutriment. In the Fourth Table, the Receptaculum Chyli is Represented, Fill'd with Mercury, with the Various Course of the Chyle-Vessels and Lympheducts, their Communicant Branches, the Lumbal Glands, the Triple-Division of the Receptacle, hitherto Unobserv'd, at least not Delineated. In the remaining Tables (I fear the tedious Enumeration of Particulars may tire the Reader's Patience) are the Organs of Hearing, with the Meatus à Palato ad Aurem, and that from the Inner Ear to the External Meatus; the Foramina of the Tonsils which Evacuate the Pituita; the several Parts of the Tongue and Aspera Arteria; the Basis of the Brain, that of the Cranium; the Muscles of the Face and Lips, several of which are not Describ'd, and the rest Erroneously.

In this Undertaking I have been Oblig'd to my Learned Friend Dr. Tancred Robinson, in Revising as many Sheets as his Leisure would give him leave. In the last Place, to render the whole more Useful, a Copious Index is added at the End; which if the Reader finds Useful, he is Oblig'd to return his Thanks to the Deserving Mr. James Fern the Surgeon, who was at the Trouble of digesting the Contents of this Work, into an Alphabetical Order, which my Avocations would by no means permit me to do.

----- If the Reader happens to Discover any Literal Errors, of which some may be found, it is hop'd he will Excuse them, upon Account of the Haste and Distance of the Press; the Practice in my Profession not suffering me always to Revise every minute Passage.

THE ANATOMY OF HUMAN BODIES.



BEFORE we enter on the Anatomical Description of Human Bodies, let us take a View of their External Parts, as they appear in the Living State: Here we shall First briefly take notice of their most remarkable Appearance in the Embryo and Fœtus of the Womb; and thence proceed to observe the several Stages of Proportion from Children to those of a Full-grown State, and Old Age: To these we shall add the different Proportions of Men and Women; and lastly the External Appearance of the Muscles and other Parts in divers Actions.

If a Præexistence of Parts in an Embryo was allowable, that at Twenty five days after Conception (Figured *Tab. 57. Fig. 3.*) would incline us to believe the Brain and whole Head had a Precedency, since its Magnitude then exceeds the whole Bulk of the rest of the Parts; but as the time of the Birth advances, the Head of the Fœtus does not commonly exceed a Fourth Part in its whole Length.

The Center or Middle Part between the two Extrems of the Head and Feet of an Infant, is in the Navel; but that of an Adult in the *Ossa Pubis*: And this Proportion of dividing Children into Four Parts, whereof the Head is one, is commonly made use of by *Painters* and *Sculptors*, &c.

A Child Two Years old has about Five Heads in its whole Length; but one of Four or five Years, has about Six; thus measured, by dividing the whole Body into so many Lengths, whereof the Head must be one. Hence it appears, as the Growth of the Body advances, there is a gradual Approach to the Proportion of an Adult of Eight, nine, or ten Faces in the whole Length.

There are many Bodies in a Full-grown State, which have not above Four or five Lengths or Faces; but those are Miscarriages in Nature, and therefore not Subjects of our present Consideration.

About the Fifteenth or sixteenth Year, Seven Faces or Lengths are then the Proportion or Measure, and the Center inclines towards the upper Parts of the *Ossa Pubis*; and tho' this Proportion may serve indifferently for a short well-set thick Person, when the Shoulders are broad, and the Limbs thick, and strong; yet if on the contrary the Shoulders are somewhat narrow, and the Limbs slender, it will represent a Youth: And however Paradoxical it may seem at first, yet an Old Woman, or the Goddess *Vesta* will fall under this Proportion of Lengths, thro' the bending forwards of the Back-bones; and tho' the Limbs bear a Proportion to one of Eight or nine Faces, yet they not being duly extended (for want of the vigorous Action of the Muscles) render the Appearance of the whole Figure very short.

The Ancients have commonly allowed Eight Heads to their Figures, says the Author of the Observations on Mr. *Du Fresnoy's* Art of Painting, made English by the Incomparable Mr. *Dryden*; but we, says he, divide the Figure [of a Human Body] into Ten Faces, from the Crown of the Head to the Sole of the Foot, in the following manner: *N. B.* That this Number of Faces depends on the Age, as above hinted, and the Quality of the Persons represented. The *Apollo* and *Venus de Medices* have more than Ten Faces.

T H E F I R S T T A B L E.



FROM the Crown of the Head I, to the upper part of the Forehead A, is the Third Part of a Face.

The Face begins at the Roots of the lowest Hairs, which are upon the Forehead AB, and ends at the Bottom of the Chin I.

The Face is divided into Three proportionable Parts; the First contains the Forehead AB; the Second the Nose C; and the Third the Mouth and Chin GHI.

From the Chin to the Pit between the Two Coller-bones, or upper Part of the *Sternum*, are Two Lengths of a Nose.

From the Pit between the Two Coller-bones to the Bottom of the Breast, called *Scrobiculus Cordis* N, One Face.

From the Bottom of the Breasts to the Navel R, one Face; the *Apollo* has a Nose more.

From the Navel to the *Pudenda* S, One Face; but the *Apollo* has Half a Nose more: and the upper Half of the *Venus de Medices* is to the lower Part of the Belly, and not to the Privy Parts.

From the Genitories or *Pudenda*, to the upper Part of the Knee, called the Thigh W, Two Faces.

The Knee contains Half a Face.

From the lower part of the Knee to the Ankle, call'd the Leg, Two Faces.

From the Ankle or *Malleolus internus* to the Sole of the Foot, Half a Face.

A Man, when his Arms are stretched out, is from the Extremity of the Longest Finger of his Right Hand to the Extremity of the Longest of his Left, as broad as he is long.

From one side of the Breasts to the other below the Paps MM, Two Faces.

The Bone of the Arm call'd *Humerus* is the Length of Two Faces from its Conjunction with the Shoulder-blade to the Elbow. Here we think our Author is mistaken, for if you allow Two Faces to that Part of the Arm between the Shoulder and bending of the Cubit, and Two more from the Elbow to the Root of the Little Finger, when the Fingers contain Half a Face, and the Distance between the Point of the Shoulder, and Pit of the Throat, a Whole Face; you will make Five Faces and Half on each Side or Half Length, which amounts to Eleven Faces in the Whole: But if you add to this what he says afterwards, that the Boxes of the Elbows with the *Humerus*, and of the *Humerus* with the Shoulder-blade, bear a Proportion of Half a Face, when the Arms are stretched out; then the Whole Distance between the Extremities of the Two Middle Fingers, when the Arms are so extended, will amount to Eleven Faces and a Half; wherefore we think the Account may stand Corrected thus.

From the Pit of the Throat to the Top of the Shoulder or Extremity of the Spine of the *Scapula*, One Face; from thence to the bending of the Cubit or Elbow, one Face and a half; thence again to the Wrist, One Face and a Nose. The Hand with the Fingers Extended contain One Face: hence it follows that Four Faces, a Nose, and Half a Face, is the distance between the Throat Pit, and Extremity of the Middle Finger; which upon extension of the whole Arm, &c. will amount to Five Faces, or rather more than less.

The Sole of the Foot, is the Sixth part of the whole Figure, says our Author; but the Foot ought not to exceed a Face, and a Nose in Length.

As for the Breadth of the Limbs, no precise Measure can be given, because the Measures themselves are not only changeable according to the Quality of the Persons, but according to the Movement of the Muscles.

A Man is Two Lengths or Faces from the Point of each Shoulder; that is to say, from the Upper Part of the *Sternum* between the *Claviculae* call'd the Pit of the Throat, to the Extremity of the Spine of the *Scapula*, call'd the Top of the Shoulder, One Length; and so on the other Side.

The Breadth of the Hips of a Man is One Length and a Half; that is, from the great *Trochanter* of the Thigh Bone of one Side, to that of the other: The precise Places of which Bones are intersected by an Horizontal Line drawn from the *Pubes* to each Side.

K, The *Pomum Adami*, or Protuberant Part of the *Larynx*, which in Men is much larger than in Women.

L, The *Sternum* or *Os Pectoris* appearing under the Skin &c. between the Two Pectoral Muscles.

N, The *Scrobiculus Cordis* commonly call'd the Pit of the Stomach, under the Skin, &c. Precisely in this Place, is the *Cartilago Ensisformis*.

O P, The *Epigastrium*.

Q Q, That of the Left Side denotes the *Inguina*; that of the Right, the *Iliac*.

R, The Region of the Navel.

S, The *Penis*.

T T, The Arms.

V V, The Legs.

W W, The Thighs.

X X, The Feet.

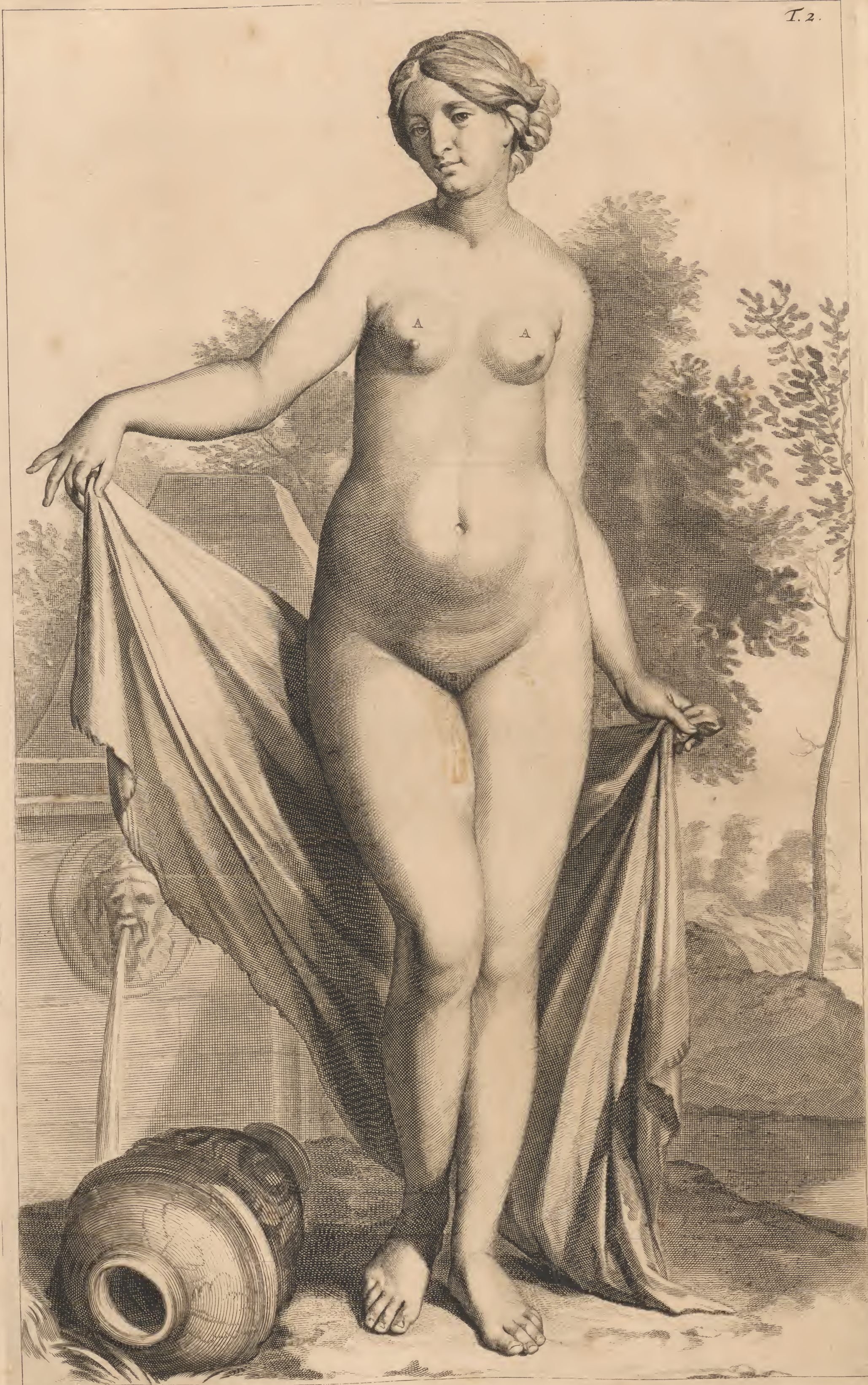
Y Y, The Shoulders.

Z Z, The Hands.

Δ Δ, The *Hypocondrium*.

* *, The *Hypogastrium*.





T H E
S E C O N D T A B L E



REPRESENTS the Fore-part of a Woman, in whom the *Symmetry* or Proportion differs from that of a Man : First, that most remarkably the Shoulders are narrower ; the Man having Two Lengths or Faces in the Breadth of his Shoulders, and One and a Half in his Hips ; whereas a Woman on the contrary , has but one Face and a Half in her Shoulders, and Two in her Hips : Secondly, the *Clavicule* or Channel-bones, and Muscles in general do not appear in Women as in Men ; whence it is, the out Line of the one, as *Painters* call it, differs very much from that of the other. Nor will any Action, in which a Woman uses her utmost Strength, occasion such Swellings or Risings of the Muscles and other Parts to appear, as they do in Men ; since the great Quantity of Fat placed under the Skins of Women so cloaths their Muscles, &c. as prevents any such Appearance.

We cannot conceive this one Quantity, and more equal Distribution of Fat under the Skins of Women does intirely proceed from any peculiar Qualification, either in their Whole Frame, or intimate Structure of their Parts where it is produced ; but by reason they lead a more sedentary Life, and are scarce at any time accustomed to hard Labours, whereby their Fatty *Vesiculæ* (express'd *Tab. 4. Fig. 14. 1, 2, 3.*) are compress'd, by the frequent Operations of their Muscles, so as to prevent that more equal Distribution, and increase of their contain'd Oyl : Yet on the other hand, it must be acknowledg'd, that the Legs, and Feet of Women, and even those who walk much, do not afford those Muscular Appearances like those of Men, which we might expect, were it not that Women did suffer very much in those Parts ; whether in the time of Impregnation, when the *Uterus* by its Extension so presses the Iliack Veins, as to hinder the Progress of the reflux Blood, whence the whole Legs become Swell'd, and frequently *Varices* of their External Veins proceed ; or when the *Menstrua* are Obstructed, the Legs (thro' a Plenitude of Serofities in the Vessels) are incident to suffer in like manner in their outward Inclosures, by reason of the Unaptness of their Position to discharge their reflux Blood.

The other remarkable Parts, which differ from a Man, and appear Externally in a Woman, are ;

A A, The *Mammæ*.

B, The *Pudendum*.



THE THIRD TABLE.



H A T has been said, in the preceding Table, relating to the Appearance of the External Parts of a Man, or Woman, may indifferently serve this Place; wherefore we shall proceed to the last Part of our Design in these Animadversions, viz. Of the External Appearance of the Muscles, and other Parts, in divers Actions. If a strong Person is to be represented in a vigorous Action, such as *Hercules* &c. after a suitable Proportion to such a Figure, and the Action is design'd; the next Thing the *Painter*, or *Sculptor* is to consider, which are those Parts, or Limbs employ'd in the chiefest Force of the Action; and if the Figure is standing, let him be sure one Leg, and particularly its Foot, be in a Right Line, or Perpendicular to the Trunk, or Bulk of the Body, where the *Center* of its *Gravity* may be plac'd in an *Equilibrium*: This *Center* is determin'd by the Heel; or if the Figure is on Tiptoe, as it's call'd, then the Ball of the Great Toe is the *Center*; the Muscles of this Leg, which thus support the Body, ought to be express'd more in Action, or Swelled in their Bellies, and their Tendons drawn more to an Extension, than those of the other Leg, which is plac'd only in Order, to receive the Weight of the Body towards that Way, to which the Action inclines it: As for Example, suppose *Hercules* was with a Club, or the like, striking at any Thing which stood before him towards his Left Side; then let his Right Leg be plac'd so as to support the whole Weight of his Body, and the Left loosely touching the Ground only with its Toes. Here the External Muscles of the Right Leg ought to be express'd very Strong, or much Tumified; but those of the Left, scarcely appearing more than if the whole Figure was in some sedentary Posture; except, as in the Case now mention'd, the Foot being extended, then the Muscles, which compose the Calf of the Leg, are in Action, and appear very Strong; as it is well express'd in the Right Leg of that excellent Figure of the Ancients, the *Gladiator* in Prince *Borghese's* Palace at *Rome*; of which, we have only a Copy, or Cast, plac'd by the Canal in *St. James's Park*. When we say, the External Muscles of the Right Leg, or that which supports the Weight of the Body, ought to be express'd very Strong; we don't mean that all those Muscles should be express'd equally Swell'd, or in Action; but that those chiefly Concern'd in that Action, or Posture, that the Leg is then in: As for Example, if the Leg, or *Tibia* is extended, then the extending Muscles, plac'd on the Thigh, are most Swell'd; if it is Bended, then the Bending Muscles, and their Tendons appear most. The like may be observ'd of the whole Body in General, when it is in pursuit of some vigorous Action; as appears in that Figure of the *Gladiator* last mention'd. The *Laocoon* in the *Vatican Garden* at *Rome* also furnishes us with an Example of this Muscular Appearance thro' the Whole; but in the *Antinous*, *Apollo*, and other Figures also of the Ancients, in the *Vatican*, and other Places, in Postures where no considerable Actions are design'd, we see their Muscles express'd but faintly, or scarcely Appearing; whence we can't but think the *Sculptors* of those Times were very well acquainted with these Observations. Tho' it be granted, the ancient *Greeks* were accusom'd to see *Nudities* very Often, nay, almost Constantly; yet the Difficulty of Copying these things from the Life is so Great, that unless they were well acquainted with such like Remarks, they would fall short of Nature in such Performances; since it is well known, even the Life it self, when expos'd to the Artist, can't continue those vigorous Actions for any time; but the Muscles fall, and the Parts loose their necessary Appearance in Action, tho' the Posture is the same. Hence it is, that Limbs, tho' Cast, or Moulded from the Life it self, are not strictly to be follow'd, unless the Life could continue the whole Spirit, or Force of the Action during the time, that the Mould was making from it, which I am apt to think is next to an Impossibility; however it might be attempted, at least in some particular Parts. Wherefore a rational Theory must help us, at least, to such Hints, that when we see, we may know what to observe, and the Reason why it appears so in the Life.

This is indeed a very Entertaining Study, which many of our Modern *Painters* and *Sculptors* are least acquainted with.

Thus far, in General, relating to the Muscles, &c. In the next Place, let us take Notice of some particular Appearances of the External Muscles, and other Parts: First, of the *Musculi Mastoidei* (*vid. App. Fig. 1. 14. 14.*) if either of these Act, the Head is turn'd to the contrary Side, and the Muscle, which performs the Action, appears very Plain under the Skin, and is often well express'd both by *Painters* and *Sculptors*, as is represented in the Neck of the Figure of the First Table.

If the Arms are lifted up, the Swelling of the Muscles, plac'd on the Shoulders, which perform that Action, call'd *Deltoides*, (*App. Fig. 1. 20.*) make the Extremities of the Spines of the Shoulder-blades, (*App. Fig. 2. 11.*) call'd the Tops of the Shoulders, appear Hollow, or Indented.

The Shoulder-blades follow the Elevation of the Arms, their *Basis* (*App. ib. 1. 1.*) incline, at that Time, Obliquely Downwards.

If the Arms are drawn Down, put Forwards, or pull'd Backwards; the Shoulder-blades necessarily vary their Positions accordingly; all which is to be learnt by consulting the Life only; when being well acquainted with what then appears in the very Action, the Artist will be able to comprehend an *Idea*, how to express it: Hence it is, we seldom find the Back so well express'd, as the Fore-parts; the Latter not being subject to such various Alterations, as the Motions of the Shoulder-blades cause in the Former.

When the *Cubit*, or Arm is Bended, the Two-headed Muscle call'd *Biceps Internus* (*App. Fig. 22.*) has it's Belly very much Rais'd; as appears in the Left Arm of the Figure of the First Table: The like may be observ'd of the *Biceps Externus*, call'd *Gemellus*, (*App. Fig. 2. 17, 17.*) when the Arm is extended.

The Right Muscle of the *Abdomen* (*App. Fig. 1. 41. 41.*) appears very Strong in Rising from a decumbent Posture.

Those Parts of the great Saw-Muscle before, (*App. ib. 40, 40.*) which are receiv'd in the Teeth, or Beginnings of the Oblique Descending Muscle (*ib. 38, 38.*) are very much Swell'd, when the Arm on the same Side is thrust Forwards; that Saw-Muscle then being in Action in drawing the *Scapula* Forwards also.

The long extending Muscles of the Trunk, plac'd on each Side the Back-bone, (*App. Fig. 2. ***) Act alternately in Walking after this manner; if the Right Leg bears the Weight of the Body, and the Left is in Translation, as on Tiptoe; the last mention'd Muscles of the Back on the Left Side, may be observ'd to be Tumified about the Region of the Loyns; and so on the other Side.

The *Trochanters*, or outward, and uppermost Heads of the Thigh-bones (*App. Fig. 2. r, r.*) vary in their Positions, in such manner, as no precise Observations can explain their several Appearances; but the Study after the Life will soon inform the diligent observing Artist.

If the Thigh is Extended, as when the whole Weight of the Body rests on that Side, the *Gluteus*, or Buttock-Muscle, (*App. Fig. 2. 32, 32.*) makes a different Appearance, from what offers at another Time; but if the Thigh is drawn Backwards, that Muscle appears still more, and more Tumified.

When the whole Leg is drawn Upwards, Forwards, and at the same time the Foot inclin'd Inwards, the upper Part of the *Musculus Sartorius* (*App. Fig. 1. 44.*) appears rising very strong; in other Positions of the Thigh that Muscle makes a furrowing Appearance in its whole Progress, as is express'd in the Figure of the First Table.

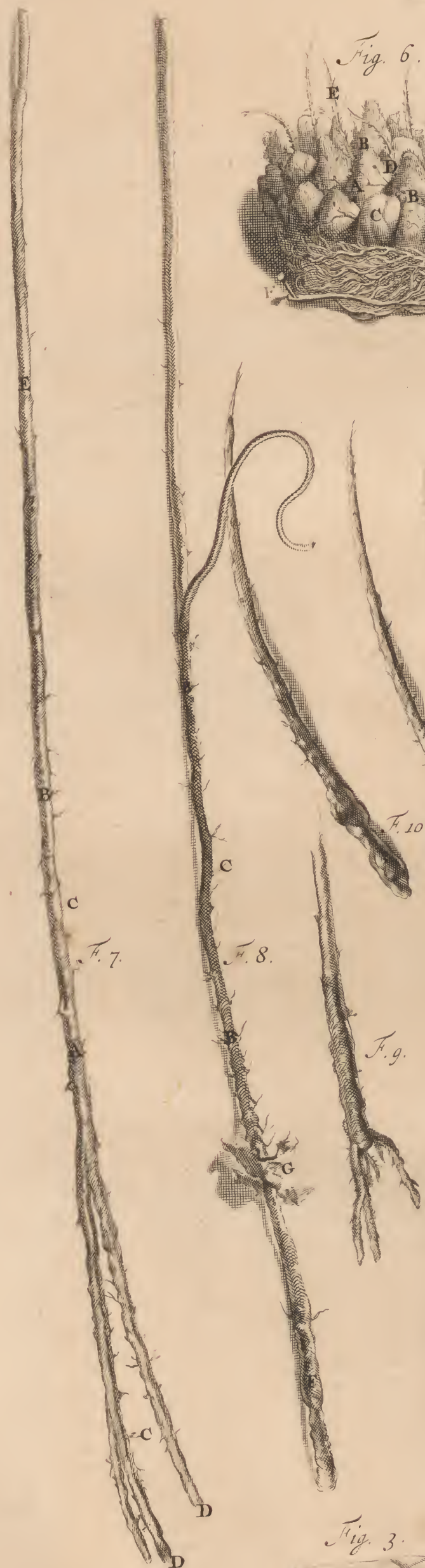
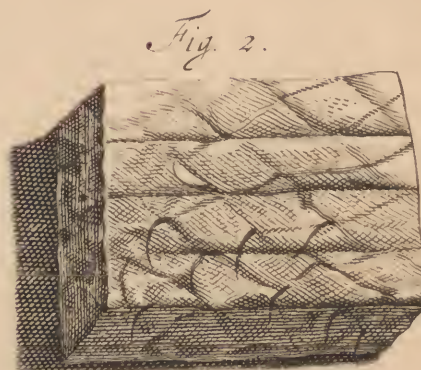
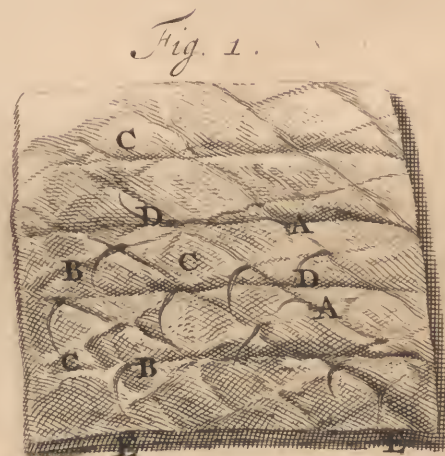
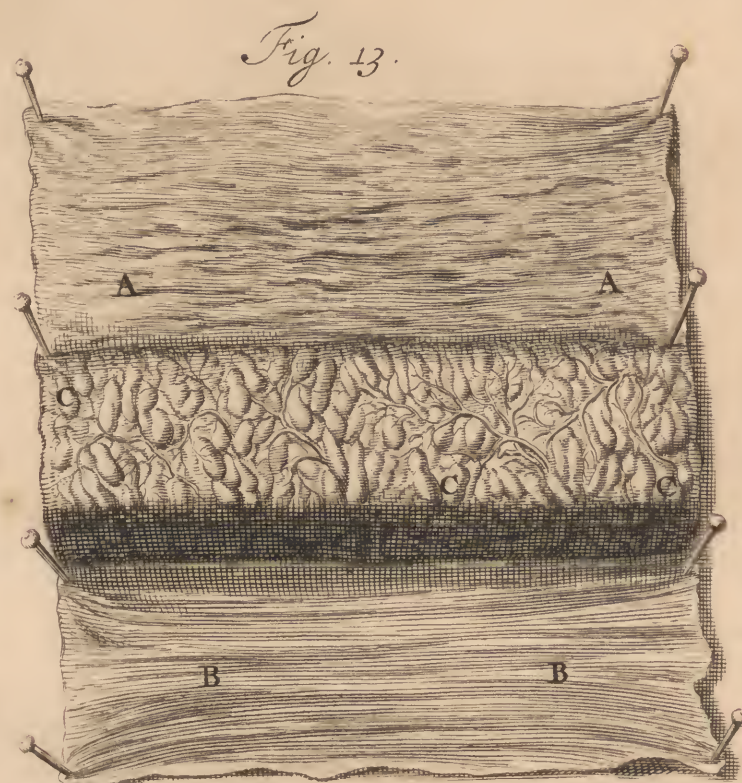
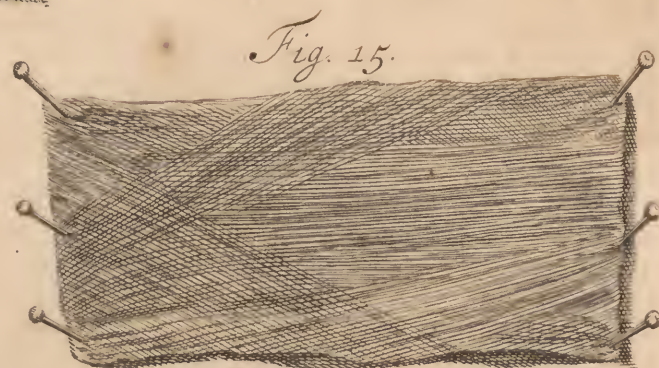
If a Man is on Tiptoe, the extending Muscles of the Shank, placed on the Forepart of the Thigh (*App. Fig. 1. 46, 47, 48.*) and those of the Foot, which compose the Calf of the Leg, (*App. Fig. 2. 43, 44.*) appear very strong, and the *Musculus Peroneus primus* (*App. Fig. 1. 55.*) makes a considerable Indentation, or furrowing at that time in its Progress, on the Outside of the Leg.

Besides these Remarks we could mention many more, which will soon be taken Notice of by the observing Artist in consulting the Life; to which he ought to apply himself, after he is well acquainted with the *Anatomy* of the External Parts; see the First, and Second Figures of our *Appendix*.

A B, The Hairy, or Back part of the Head.
C, The Right Temple.
D, The Hair tied up on the *Occiput*.
E, The Neck, where Fontanels are usually made.
F F, The Shoulders.
G, The Back.

H, The Loins.
I I, The Buttocks.
K K, The Thighs.
L L, The Legs.
M M, The Arms.





THE FOURTH TABLE.

Fig. 1.

REPRESENTS a Portion of the *Cuticula* or Scarf-skin, rais'd from the Back of the Hand, and view'd with a Microscope.

AA, The Perforations or Pores, whereby the Sweat is discharged.

BB, The Indentures or Furrows.

CC, The Bladder like Protuberances; both these arise from the Inequality of the Papillary Surface of the Skin it self.

DD, The Hairs which break forth through the *Cuticula*.

EE, The Asperities or Filaments, by which the *Cuticula* is fastned to the True Skin.

With the Assistance of the Microscope, the *Cuticula* appears compos'd of divers *Strata* or Beds of Scales, fastned to the Papillary Surface of the Skin; and are so intangled with each other, as that they appear a continued Pellicle or Membrane when rais'd from the True Skin, whether by the Application of Blister-Plasters in Living People, or Sealding Water, Hot Irons, or the like, in Dead Bodies: According to the Number of these *Strata* or Beds of Scales, the Skin appears to be more, or less Fair, and the Person is commonly said to have a thicker or thinner Skin; tho' very frequently the Jaundice and other Diseases give it an ill Tincture. The *Cuticula* like the True Skin is not Uniform, in divers Parts of it the Number of its Scales and their *Strata* exceed those of others; on the Lips not above two *Strata* appear; on other parts more, seldom less; in the Bottoms of the Feet of those who walk much, and the Palms of the Hands of Laborious Mechanicks, these *Strata* are not only very numerous, but each Scale is thickned. If you Macerate the *Cuticle* in Water, after some days, its *Strata* of Scales will appear, and you may divide it into Two, sometimes Three, or Four Pellicles; the like Division of it may be also observ'd in *Vesicatories* or Blisters rais'd on Living Persons.

Fig. 2.

A Portion of the *Cuticula* rais'd from the Bottom of the Foot, and view'd with the same Microscope as the former; where its remarkable Thickness appears.

Fig. 3.

A Portion of the *Cuticula* rais'd from the Back; in which the Indentures, Furrows, &c. agree with those of Figure the 1st. The Surface of the True Skin of that Part being exactly agreeable with that of the other; but at the Extremities of the Fingers, and Thumbs, the *Cuticle* is variously wreathed and contorted, conformable to the subjacent Papillary Protuberances of the True Skin, as appears in the following Figure.

Fig. 4.

The Upper and Inner Side of the Thumb drawn likewise by the Assistance of the Microscope.

A, From the Point arise

BB, Two Lines, of a Circular Disposition;

CC, Others which form Triangles.

D, Other Lines variously contorted or winding.

The *Cuticle* being remov'd, the *Cutis* or Skin it self appears.

Fig. 5.

A Portion of the Skin of the Arm, as it appears on its External Surface to the naked Eye.

Fig. 6.

The External Surface of the Skin, when view'd with a Microscope; where its Internal Structure or Rete of Blood Vessels are also exprest.

AA, The *Papillae Pyramidales*; made up of divers Pyramidal Roundish Glands, in whose Composition the Nerves have a considerable Share.

BB, The Capillaments of the little Aqueous Vessels placed between the *Papillae* according to *Bidloo*. I must confess notwithstanding all the Diligence I could yet use in examining this Part with the Microscope, or otherwise, I have hitherto doubted of the Existence of these Aqueous Vessels, between the *Cuticula* and *Cutis*; in which some have placed the Seat of that Tawny Tincture of the *Aegyptians*, and that Black one of the *Aethiopians*.

CC, The Sudoriferous Glands, which compose the *Papillae*.

DD, The Sweat Vessels or Excretory-ducts arising from the last mentioned Glands.

EE, The Hairs arising near the Pores of the Sweat Vessels: Besides these Vessels, the Skin is furnished with Arteries, Veins, Nerves, and Lympheducts; the Trunks of the Two former are well exprest in this Figure FF: Hence it appears the Skin can no more be esteem'd a Similar or Simple Part, than any of those call'd Dissimilar or Compound Parts. Nor is there any Part of the whole Animal Oeconomy, that can be justly esteem'd Simple or not Compound; even the Blood Vessels, Nerves, and Lympheducts are Compounded Parts, as shall be else where demonstratd. Besides the Pyramidal Sudoriferous Glands, which compose the *Papillae Cutis*, there are other Sudoriferous Glands, placed on the Internal Surface of the Skin; the most considerable of these we find in the *Axillae*, where they are sometimes call'd *Axillares*, but more properly *Miliares*, from their Figure; the Axillary Glands lying underneath these Sudoriferous ones; they receiving the *Lympha*, brought into them by the Lympheducts springing from the whole Arm, do discharge it again into the Exporting Lympheducts in its Way to the Thoracic Duct. There are other Sudoriferous Glands, tho' not so evident to the naked Eye, under the Skin of the Fingers, *Inguina*, and behind the Ears: The Hairy-scalp, Skin of the Forehead, Palms of the Hands, and Soles of the Feet are also furnished with these Glands; wherefore we shall not distinguish them with the Names of the Places of their Situation, but choose to give them a more general Denomination, either as to their Office, as *Glandulae Sudoriferae*, or Figure, as *Miliares*. In the Skin also are placed those Bodies whence the Hairs arise; these, by some are also esteem'd Glands, and call'd *Piliferae*: These Piliferous Bodies or Glands, are furnished at their Roots with Importing and Exporting Blood Vessels, Nerves, &c. the Hairs being as it were their Excretory

Ducts with this Difference from those of other Parts, viz. They receiving their separated Juyce immediatly from the Pores in the Extremities of the Blood Vessels; whereas the Hairs, as we conceive, have their Radical Moisture transmitted to them by the Mediation of a Spongy Body which absorbs it from the circumjacent Parts: Hence it is that the Hairs grow in dead Bodies, when the Natural Motions of the Fluids cease. The Hair between the Light, and naked Eye, appears pellucid; but if view'd with a Microscope in that Position, it appears Spongy, or not unlike the Internal Part of a Cane: It seems to be compos'd of horny globular Particles variously joyn'd together, and colour'd, where it hath Plenty of Moisture, it is commonly Pendulous; if more Dry, it is Curl'd.

Fig. 7, 8.

Two of the Hairs of the Head figur'd with a Microscope:

A, Its spongy Body compos'd of horny globular Particles.

BBB, Its straight and transverse Stalks, which joyn its Globules together.

CCC, The woolly or downy Part of the Hair, which descends from above, and stands obliquely downwards; whence it happens, when the Ends of the Hairs are not placed in their right Position, the Hairs are apt to intangle in Combing, as it do's in those Periwigs made of what they call *Combing*s.

DD, The Top of the Hair divided:

E, Its Middle Part:

F, Its Root arising from the Piliferous Body, placed within the Skin.

G, A Portion of the *Cuticle*, which commonly sticks to the Hair when extractd.

Fig. 9.

The Branches, which sometimes appear on the Top of the Hair by a Microscope.

Fig. 10, 11, 12.

The different Thickness of the Hairs of divers Parts of the Body, when view'd with the same Microscope. Figure the Tenth, that of the Groin; the Eleventh, that of the Nostrils; the Twelfth Figure represents the Hairs of the Eyelids.

Immediatly under the Skin is placed the Fat in Humane Bodies; nor is it found in all Parts alike; on the Forehead it is very little, under the Hairy Scalp less, except its Hinder Part, on the Eyelids and *Penis* none, nor on the *Musculus Quadratus Colli*.

Fig. 13.

A Portion of the Fat of the *Abdomen*.

AA, Its External Membrane.

BB, Its Internal Membrane.

CC, The Globules of the Fat with their Blood Vessels passing to them, whence their oily Contents are deriv'd.

1. The Integument or Covering of the Globules of Fat rais'd.

2. The Globules of Fat themselves.

3. Some of the Globules divided from the rest; in which the Breakings off of their Membranes, and Blood Vessels, are exprest: Hence it appears, that the Fat is a *Congeries* or Heap of Membranous Cells, which in the Microscope appear distended with Oyl: If the Existence of those *Ductus Adiposi* could be demonstratd, as *Bidloo* intimates at CC in the last describ'd Figure, I should incline to think of another Office of them intended in Nature, than what *Malpighius* has assigned them, viz. To convey the oily Contents of the Adipose Cells to some neighbouring Interstices, whether of Muscles, or other Parts, that are on Occasion mov'd, or slide on each other; or into some remarkable Cavity, as into that of the *Abdomen*, &c. where it meets with a Mucilage separated by the Mucilaginous Glands placed in the neighbouring Membranes, and serves to make up a Composition to Lubricate the Parts according to Doctor *Haver's Osteologia Nova*, Pag. 209.

Fig. 14.

The Outside of the last Common Integument of the whole Body, call'd the Common Membrane of the Muscles; some divide this into Two Membranes, and distinguish them by the Names of *Carnosae* and *Communis Muscularum*; which we look on to be altogether needless as may appear by the following Description.

Fig. 15.

The Inside of the Membrane last describ'd: The rise of this Membrane is commonly said to be from the Spines of the *Vertebrae* of the Back, because as I suppose that is the most stable Part to which it's Connected: It is co-extended with the Skin it self, as appears in most Parts, and has its Corresponding *Foramina* for the Eyes, Nostrils, Ears, Mouth, *Anus*, and *Pudendum*: As to its Intimate Structure, I have always met with concurring Experiments and Observations, of its being an Extensible Body, compos'd of divers *Strata* or Membranes, framing Cells, which have divers lesser Cells or *Loculi* within them; and in divers Parts, where the Looseness of the Skin it self would admit, those lesser Cells or *Loculi*, are fill'd with Oil, and are call'd Fat; but in other Parts where either the Hardness of the subjacent Bone, when the Skin is extended, as on the Top of the Skull, or the repeated quick Motions, as of the Eyelids, or the Structure of the Part, as of the *Penis*; these Membranous *Loculi* are not so extended with Oil, as to make an Appearance of Fat; whence it is we find this Membrane much thicker in those Parts last mentioned, than in others; and on the contrary, thinner and fewer *Strata* of *Laminae*, where its Cells are partly possess'd with Fat. This Common Membrane is furnish'd with Vessels of all sorts; nor is it confin'd to the Surface of the Muscles only, but insinuates in their *Interstitia*, and helps to compose their Coverings; whence it happens that by blowing into the divided *Strata* of the Cells of this Membrane, the whole Body of the Animal is Tumified; which is commonly practis'd by Butchers, especially in dressing their Veal.

The common Integuments of the whole Body being demonstratd, we proceed to those particularly belonging to the Head; nor shall we omit speaking again of these hereafter, where any thing in their particular Parts occurs to our Observation or Memory, which the succeeding Figures may help us to explain.

T H E F I F T H T A B L E.

Fig. 1.

AA, &c.



HE WS the Internal Part of the Hairy Scalp, as it appears after a cross Section, and hanging down, when free'd from its subjacent Membrane the *Pericranium*. The Thickness of the Hairy Scalp is not only owing to the Number of its Piliferous Bodies, and they so much larger than those of other Parts, except the Chin, Lips, &c. but it is also plentifully furnish'd with Sudoriferous Miliary Glands; both which appear in a Division of the Scalp: Hence so many Blood-Vessels, and they so very large, are to be found in this Part; whence such large Fluxes of Blood arise in dividing the Scalp in Living Bodies, as is commonly done to apply the Trepan, &c.

BB, &c. Part of the *Pericranium*, together with the Frontal Muscle on the Left Side hanging down: The *Pericranium* like the common Membrane of the Muscles may be divided into divers *Lamelle*, or Membranes, as is hinted in the Explanation of the preceeding Table: It is plentifully furnish'd with Blood-Vessels which chiefly spring from the Temporal and Occipital Arteries; but divers of them arise from the Arteries of the *Dura Mater*, which pass thro' the Skull; of which Two remarkable Trunks may be observ'd, one on each Side the Longitudinal Suture, between that Part call'd the *Sinciput* and *Occiput*, a little above the *Lamdoideal Suture*.

C, Part of the *Pericranium* cleaving to its Subjacent Membrane the *Periostium*.

DDD, The *Periostium* rais'd and reclin'd to the Right Side, where the Pores of that Membrane, and of the Skull, for the Transit of the Blood-Vessels, are express'd: Nor is the *Periostium* of this Part truly distinct from the *Pericranium*, but seems to be a Continuation of its Inferior, or Internal *Lamelle*; the Distribution of the Blood-Vessels being in common to both, except where they are distinguish'd by the Temporal Muscles, under which the *Periostium* is plac'd, and the *Pericranium* runs over them.

EE, The *Os Frontis*, and *Bregmatis*.

F, The Upper Part of the Temporal Muscle divested of the *Pericranium*.

G, Part of the Coronal Suture on the Left Side.

H, The Sagittal Suture.

I, A small Artery, together with a Branch of a Nerve passing out of the Skull to the Frontal Muscle; in the former an Aneurism has happen'd on a sudden, and a great Laughter, when all Attempts in the Cure thereof prov'd unsuccessful, till with a pointed Actual Cautery the Bone was so burnt, as to cause an Exfoliation of its External *Lamina*; the concealed bleeding Artery being then not only more expos'd to a Compress, but by the Removal of the circumjacent Bone, the neighbouring Blood-Vessels in its *Meditullium*, were at Liberty to confirm a *Cicatrice*.

Fig. 2.

The Upper Part of the Brain *in Situ*, with its Membranes, the Top of the Skull being remov'd.

A A, The *Dura Mater* covering the Brain on the Right Side.

B B, The Left Hemisphere of the Brain cover'd with the *Pia Mater* only, where the *Anfractus* of the Brain are elegantly express'd.

C C, The *Dura Mater* on the Left Side divided, and reclin'd laterally.

DD, A faint Appearance of the Brain thro' the *Dura Mater*.

E, The Blood-Vessels of the *Dura Mater* lying in its Duplicature.

F, That Part of the *Dura Mater*, which was contiguous to the Coronal Suture, where divers Blood-Vessels pass from it to the Skull, of which some pass thro' to the Hairy Scalp.

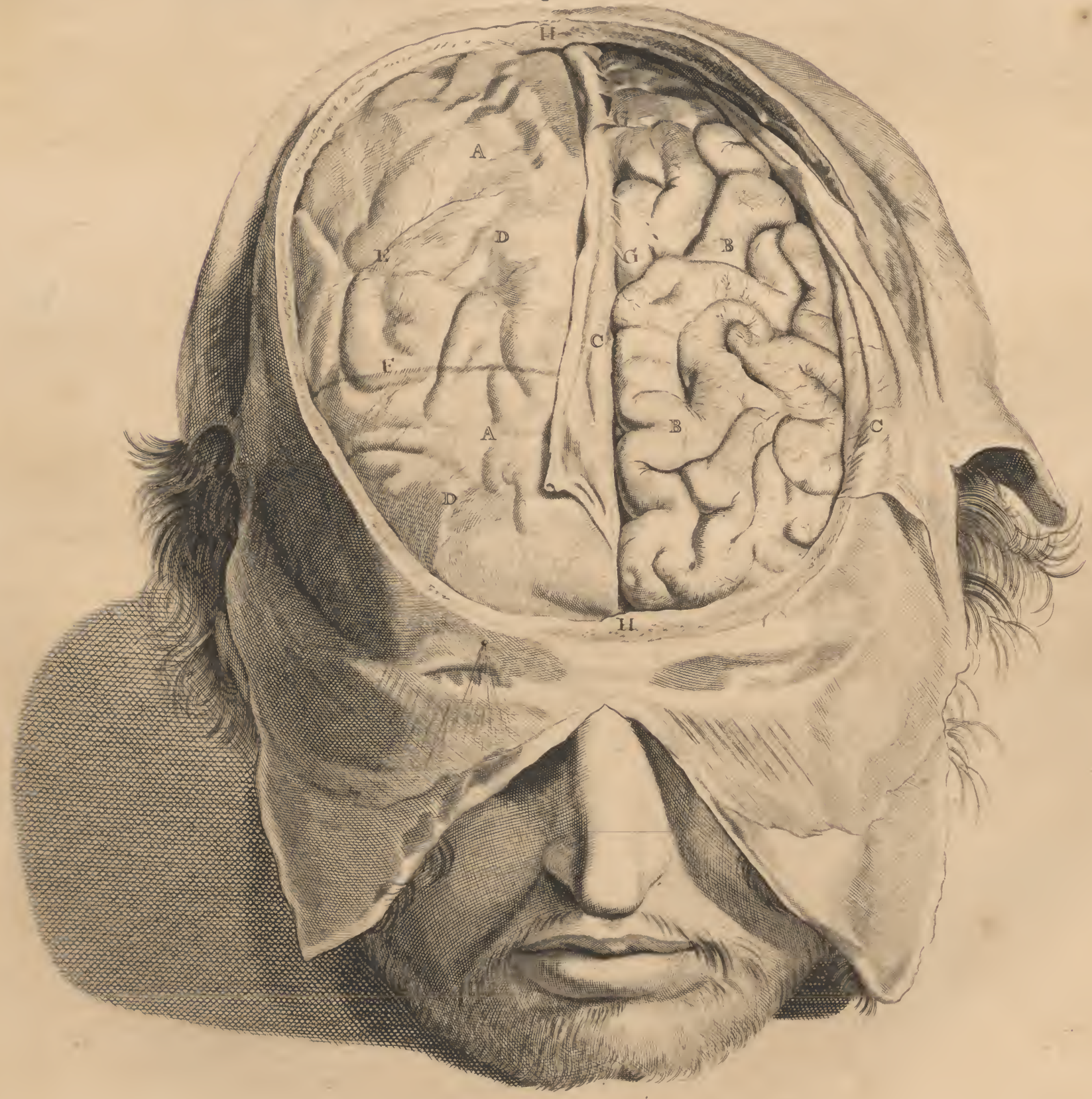
GG, The Veins of the Brain lying in the Duplicature of the *Pia Mater*, before they enter the Longitudinal *Sinus*; here it is they are subject to Rupture in Concussions of the Brain, and let out their contain'd Blood between the *Dura* and *Pia Mater*; which Case I have seen more than once, where the *Dura Mater* ought to have been divided, &c.

HH, The Edges of the Skull.

Fig. 1.



Fig. 2.



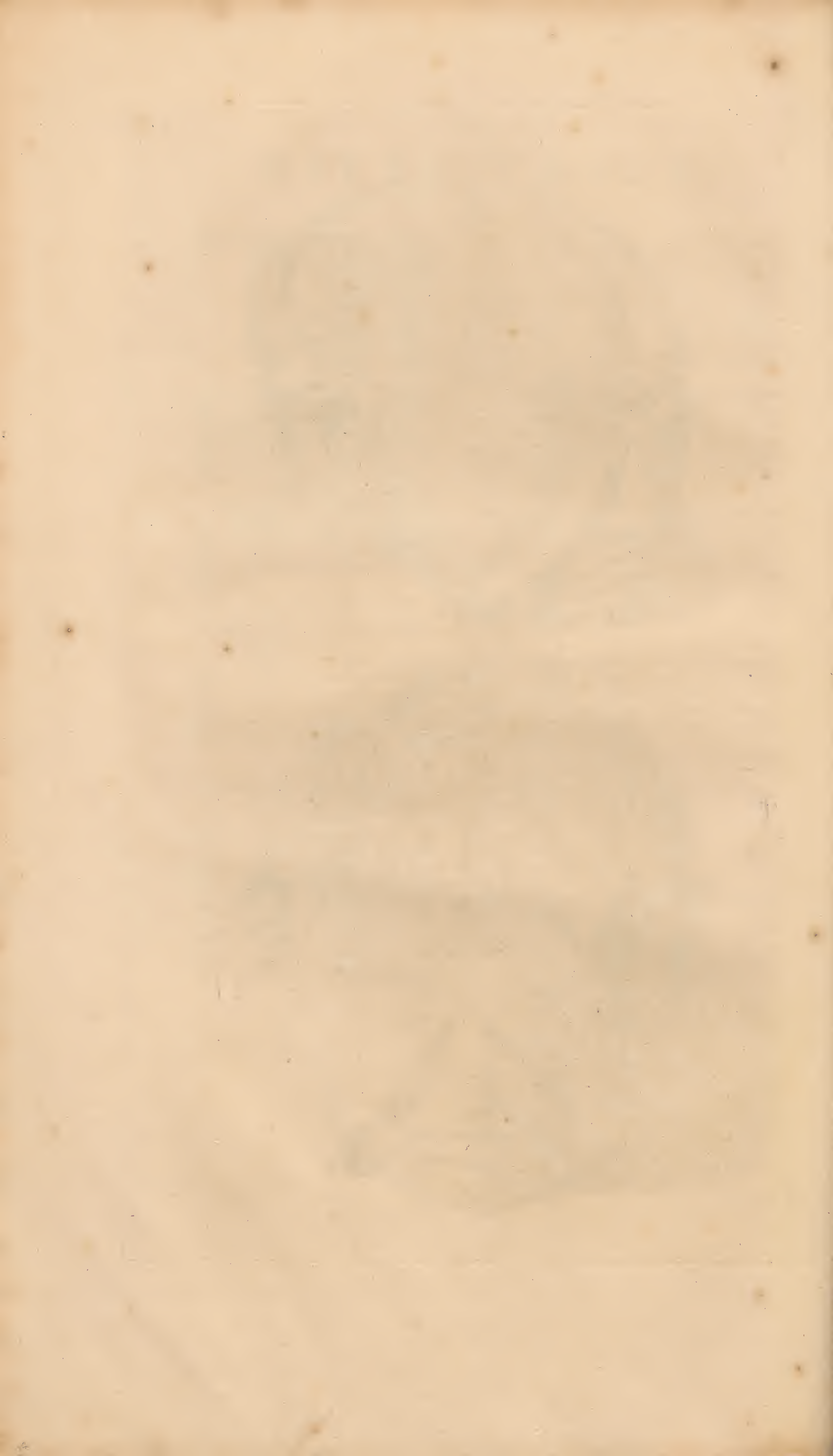


Fig: 1.



Fig: 6.

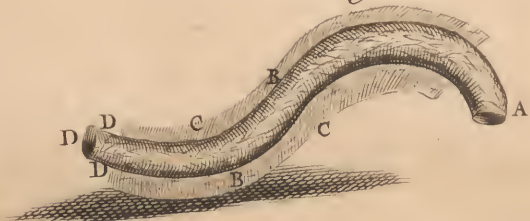


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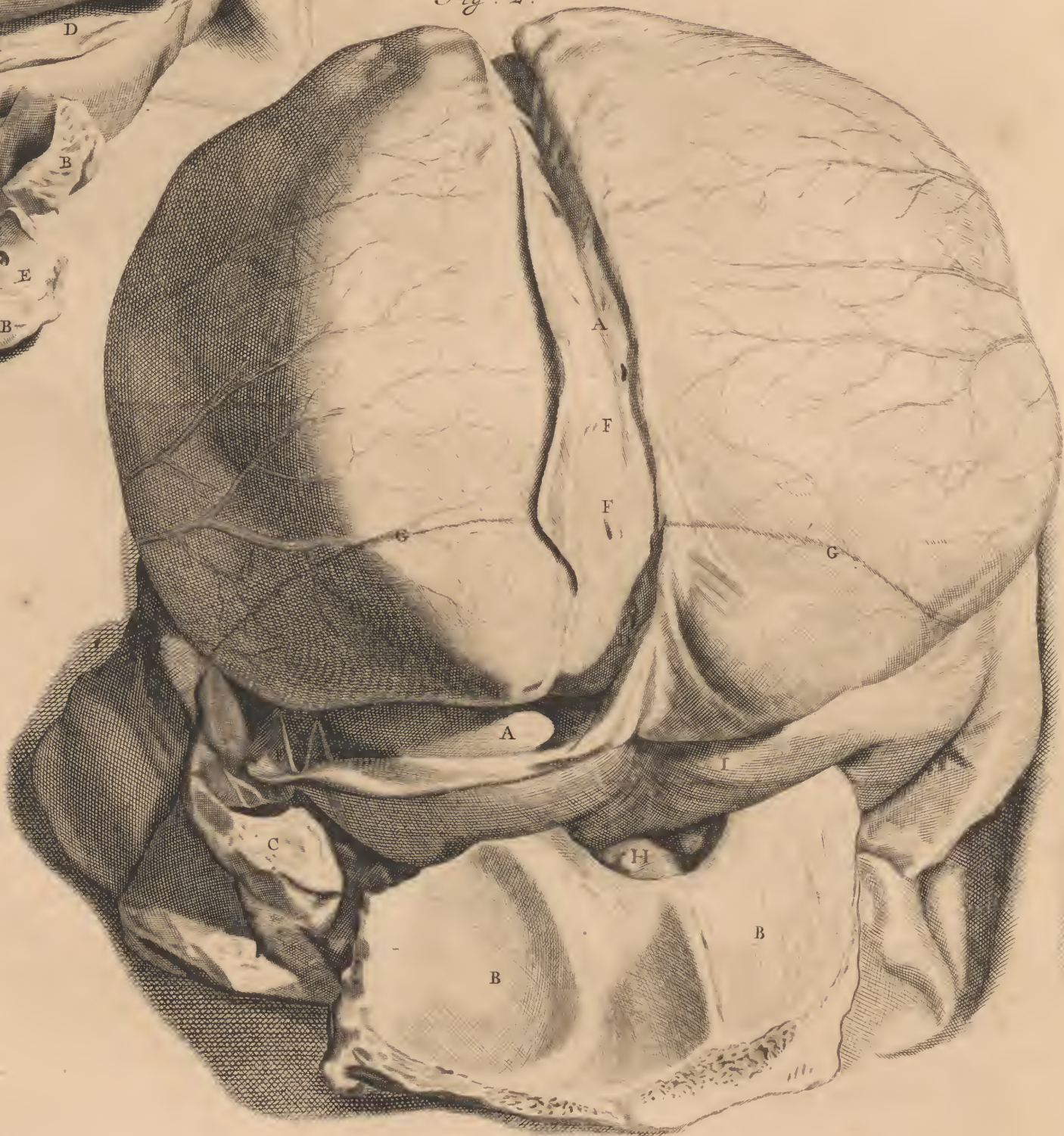


Fig: 3.

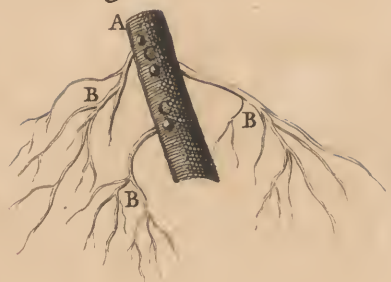
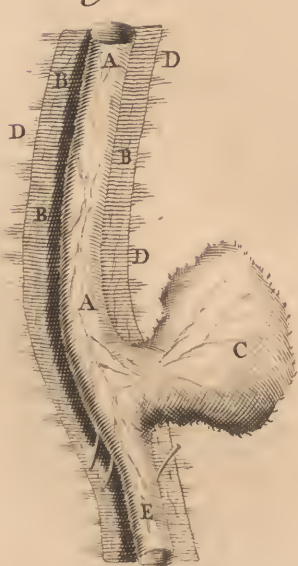


Fig: 4.



Fig: 5.



T H E S I X T H T A B L E.

Fig. 1.



H E Upper Part of the Brain cover'd with the *Dura Mater*, as it appears after the Top of the Skull is taken off.

A A, The Edge of the Forepart of the Skull, whence the Upper Part was divided.

B, Part of the Temporal Muscle.

CC, The *Dura Mater* covering the whole Brain.

DD, Divers Impressions on the *Dura Mater*, which adhered to the Internal Part of the Skull, near the Coronal Suture; where divers Blood-Vessels pass between it, and the Hairy Scalp.

EE, The Blood-Vessels distended with Wind.

FF, The Longitudinal *Sinus* opened from near its Beginning at the *Os Crista Galli*, to its Entrance into the Two Lateral *Sinus*'s, as express'd in the following Figure.

Fig. 2.

A A, The Back Part of the Longitudinal *Sinus* opened, together with the Lateral One on the Left Side.

BB, The *Os Occipitis* broken off and turn'd down.

C, The *Os Petrosum*.

D, The Orifice of the Fourth *Sinus*, call'd *Torcular Herophili*, at the Conjunction of the Two Lateral *Sinus*'s with the Longitudinal One.

E, Divers transverse strong Ligaments in the Lateral *Sinus*.

FF, The Orifices of the Veins of the Brain in the Longitudinal *Sinus*.

GG, That Part of the *Dura Mater*, which adhered to the Lamdoidal Suture of the Skull.

H, The *Medulla Oblongata* going out of the great *Foramen* of the Skull, in the *Os Occipitis*.

I, The *Cerebellum* cover'd with the *Dura Mater*.

Fig. 3.

A, Part of the Longitudinal *Sinus* opened.

BB, &c. The Veins of the Brain, before they enter the *Sinus*.

CC, Their Orifices opening into the *Sinus* variously; some of them being parallel to their Trunks; other Veins first pass in the Duplication of the *Sinus* forwards, and others backwards; by which means the Progressive Motion of the Blood is not only assisted in some Positions of the Head, and its too rapid Motion prevented in others; but a due Mixture and Reunion of its Parts are made, after undergoing so elaborate a Strainer, as that of the whole Substance of the Brain, especially in its Cortical or Glandulous Part.

Fig. 4.

A A, The Posterior and Lateral Part of the Brain covered with its *Meninges*.

BB, The *Os Petrosum* broken off from the *Cranium*.

C, Part of the *Os Occipitis* in like manner divided from the Skull.

D, The Inferior and Tortuous Part of the Lateral *Sinus* on the Left Side opened, in which may be observed its transverse strong Ligaments, express'd Fig. 2. E.

E, The Cavity in the *Os Petrosum* or *Specus*, which receives the Bulbous Part of the Lateral *Sinus* at the Beginning of the Jugular Vein.

F, The Trunk of the Internal Jugular Vein.

G, A Probe inserted into the Jugular Vein by the *Sinus*.

H, The Bulbous Part of the Lateral *Sinus*, which was contained in the *Specus* of the *Os Petrosum*.

Fig. 5.

A A, Part of the Lateral *Sinus* cut off.

B B, A lacerated Portion of the *Dura Mater*, which involv'd that *Sinus*, expanded.

C, The Bulbous Part of that *Sinus*, which was contain'd in the *Specus* or Cavity of the *Os Petrosum*; which is a *Diverticulum* to the Re-fluent Blood, lest it should too suddenly press into the Internal Jugular Vein.

DDD, The Filaments of the *Dura Mater* broken off.

E, The Beginning of the Internal Jugular Vein.

As the Structure of the Veins of this Part differ from that of others; so also the Arteries of the Brain, have a peculiar Organization at their Entrance from the ordinary Course of those of other Parts, as does somewhat appear in the following Figure: We have also Figured this Disposition of the Trunks of the Carotid Arteries, finding them much more Tortuous, than they are here represented. *Vid. App. Fig. 3. 13, 14.*

Fig. 6.

A, The Trunk of the Carotid Artery passing towards the Brain.

B C, Part of its Membrane borrowed of the *Dura Mater*, separated and expanded.

DD, The lower Part of the Artery next the Heart.

The Vertebral Arteries also enter the Cavity of the Skull very much Contorted, as appears in the Third Figure of our *Appendix*, and again in the Eighth Figure; where II, shews their passing through the Transverse Process of the first *Vertebra* of the Neck; K K, their Trunks marching between the first *Vertebra* and *Os Occipitis*, to the great *Foramen* of the last named Bone, through which they pass into the Skull, and afterwards conjunctly make up the Cervical Artery. The Design of these Curvations in the Arteries, before they enter the Cavity of the Skull, is to prevent too great a Swiftness of the Current of the Blood through the whole Substance of the Brain, which being placed so near the Heart, would also suffer by its too great Pulsation; were it not that the Contorted Trunks of these Arteries lessened its force; else the frequent disorderly Motions of the Heart, would make us as often incident to suffer great Inconveniences in the Brain; yet nevertheless we are incident to suffer in some Degree; whence 'tis that the Passions of the Mind, wherein the Heart is affected so suddenly, disorders the Reason.

T H E S E V E N T H T A B L E.

Fig. 1.



EPRESENTS the Posterior Part of the Brain as it appears lying on the *Basis* of the Skull, its Upper Part being free'd from the *Dura Mater*.

A A, The Hinder Lobes of the Brain raised, and drawn somewhat forwards.

B C, &c. The Ligature, and Two Pieces of Wood, made use of for the better supporting the Brain in that Position.

DD, Parts of divers *Quadruplicatures* of the *Dura Mater*.

EE, A Division of the Second Process of the *Dura Mater* on the Left Side; in which the *Cerebellum* appears.

FF, The *Cerebellum* laid bare in that Division.

GH, The Second Process of the *Dura Mater*, on the Right Side intirely covering the Upper Part of the *Cerebellum*.

III, The Edge of the *Os Occipitis*, whence the Upper Part of the Skull is divided.

KK, The Common Integuments of the Head turned off.

Fig. 2.

The Inner Face of the *Os Occipitis*, together with the *Cerebellum*, &c.

AA, The *Cerebellum* inclined forwards towards the *Cella Turcica*, so that its Back Part, which rests on the *Os Occipitale*, comes in view.

BB, The Hindmost Part of the *Medulla Oblongata*, in its Passage out of the great *Foramen* of the *Os Occipitis*.

b, The *Processus Vermiformis* of the *Cerebellum*.

CCC, Divers Roots of the Eighth, Ninth and Part of the Tenth Pairs of Nerves.

aa, The Accessory Nerves accompanying those of the Eighth Pair, at their Egrefs.

DD, &c. The *Crassa Meninx*, or *Dura Mater*.

EE, &c. Part of the Edge of the Skull.

FF, The Hairy Scalp dissected.

G, Part of the *Pericranium* raised.

H, The Left Ear.

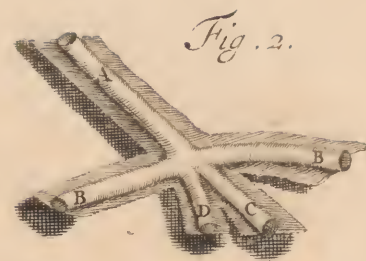


Fig. 1.



Fig. 2.





T H E E I G H T H T A B L E.

Fig. 1.



S Part of the *Dura Mater*, together with the *Falx*, dried.

AA, The *Falx* supported, so as to shew its proper Extent and Figure.

BB, The *Sinus Falcis Superior* or *Longitudinalis*, opened.

C, The *Sinus Falcis Inferior*, not distinguished in this Figure.

DD, &c. The Orifices of Veins opening into the *Longitudinal Sinus*, and Trunks of other Veins going to it.

E, The Beginning of the *Longitudinal Sinus* at the *Os Crista Galli*.

FF, The Left Lateral *Sinus*.

GGG, Two Parts of the Quadruplicatures of the *Dura Mater*, lying between the *Cerebrum* and *Cerebellum*.

HH, &c. The Sticks, Thread, and Pins made use of, to support the Membrane in drying it.

Fig. 2.

Parts of the above mentioned *Sinus* distended with Wind and dried, together with Part of the *Dura Mater*.

A, The *Longitudinal Sinus*.

BB, The Two Lateral *Sinus*'s.

C, The Fourth *Sinus*.

D, A large Vein, which empties its Blood at the Conjunction of the Four *Sinus*'s; which Union of the *Sinus*'s, is called *Torcular Herophili*.

Fig. 3.

The Connection or Beginning of the *Falx*, at the *Os Crista Galli*.

A, The *Os Cribrosum*.

B, The *Crista Galli*.

C, A Portion of the *Falx* cleaving to the *Crista Galli*.

Fig. 4.

Part of the *Falx* dried, and exprest somewhat bigger than the Life.

A, The Forepart of the *Falx*;

B, Its Hindpart.

C, That Part of the *Falx* where the Fifth *Sinus* passes, called *Sinus Falcis Inferior*. To this lower part of the *Falx* the *Pia Mater* firmly adheres, where divers Veins pass into its Lower *Sinus* as well as its Upper one; which together with divers Adnascences the *Falx* has with the two Hemispheres of the Brain, (as may be seen by freeing it from them) the Brain is kept suspended, least its Superiour Part should press too much on its Inferiour; which Office cannot be ascribed either to the Internal Part of the Brain, called *Fornix*, as the former and some later Anatomists pretend, or to the *Corpus Callosum*, as *Vieussenius* will have it: A further use of the *Falx* is by its Ex-

tenfion between the Two Hemispheres of the Brain, to prevent the Superincumbence of the one upon the other, when we lie on either Side; and by its Connection with the *Os Crista Galli*, and Continuation of it to the Superior Part of the *Dura Mater*, and its Second Proceffes, lying between the *Cerebrum*, and *Cerebellum*, the whole Brain is kept suspended, and especially its Hinder Lobes, from pressing on the *Cerebellum*.

DD, Divers Veins of the Brain before they enter the *Longitudinal Sinus*.

E, The Cavity of the *Longitudinal Sinus* as it appears after a Transverse Section of it.

FF, Part of the *Dura Mater* which covered the Left Hemisphere of the Brain.

GG, The Superiour and External Surface of the *Dura Mater* on the *Longitudinal Sinus*.

Fig. 5.

The Two Hemispheres or Upper Part of the Brain, together with the *Cerebellum*, as they appear when the whole Brain is taken out of the Skull, and laid on its *Basis*.

AA, The Two Hemispheres of the Brain.

BB, The *Cerebellum* covered with the *Dura Mater*.

C, The *Processus Vermiformis*.

D, A Portion of the *Medulla Oblongata* cut off.

EF, The Forepart of the Division of the Two Hemispheres of the Brain, in which the *Falx* is inserted.

GG, The Middle Membrane of the Brain according to *Bidloo*, separated and turned to one side, which we take to be the External Membrane or *Lamina* of the *Pia Mater*. That the *Pia Mater* is composed of divers *Strata* of Membranes, not unlike the *Peritonæum*, does not only appear in an *Hydrocephalus* or Hydropical Brain; but in ordinary Dissections we find it Double, especially about the *Medulla Oblongata*, *Processus Annularis*, &c.

In Wounds of the *Pia Mater*, and Brain, we meet with very great *Fungus*'s, even to the Size of a Tennis Ball above the Surface of the *Dura Mater*, and Skull; which may be taken off by Incision without a dangerous Flux of Blood: An Instance of which we have had more than once an Opportunity of observing; and notwithstanding these Excrescences have been frequently removed, yet they have grown again, and the Patient has Languished, and died. *Vid. Diemerbroeck, Anatom. Lib. III. Cap. V.*

III, The *Pia Mater* remaining on the Brain.

KKL, The External Surface of the Brain composed of divers turnings and windings of its Cortical Part.

MM, The Retiform Distribution of the Blood Vessels between the External and Internal *Lamina* of the *Pia Mater*; the largest of these Vessels on the Superior and External Part of the Brain, are Veins which discharge their Blood into the *Longitudinal Sinus*, from whence they are here cut off.

T H E N I N T H T A B L E.

Fig. 1.



HE whole Brain taken out of the Skull, free'd from the *Dura Mater*, and lay'd on its Hemispheres, its *Basis* being uppermost. In this Figure many things are unobserv'd, and others very ill exprest, wherefore we shall add a Figure of the Brain in this Position, more correctly drawn after the Life. *Vid. Appendix.*

- A A, &c. The *Basis* of the Brain;
- B B, &c. Its Division into Four Lobes;
- C C, The Foremost Lobes,
- D D, The Hindmost Lobes of the Brain.
- E, The *Infundibulum*, very ill exprest.
- F F, The Two white Protuberances behind the *Infundibulum*, not well exprest.
- G G G, The Annular Process, or *Pons Varolii*, and Beginning of the *Medulla Oblongata*.
- H, The *Medulla Oblongata* cut off near its Egress at the great *Foramen* of the *Os Occipitis*.
- I I, Part of the *Pia Mater*, where it is apparently Double between the Annular Protuberance, and *Medulla Oblongata*.
- K K L L } The *Cerebellum* cover'd with the
- O O, } *Pia Mater*.
- M, A Section in the *Cerebellum*.
- N, The Arboresecent Distribution of Blood Vessels within the *Cerebellum*.
- P P Superior, The Trunks of the Carotid Arteries injected with Wax, and cut off.
- P P Inferior, The Cervical Artery in like manner injected with Wax.
- NB. That the Two Semicircular Branches, which join these Two last mentioned Arteries together, call'd the Communicant Branches, are exprest too large in this Figure, or else the Subject, from whence it was taken, differed very much from the ordinary Course of Nature; neither of which are mentioned by *Bidloo*.
- Q R S, The Olfactory Nerves.
- T T, The Optick Nerves;
- V, Their Junction;
- W W, Their Trunks cut off at their Egress from within the Skull.
- X X, The Third Pair of Nerves, call'd *Oculorum Motorii*.
- Y Y, The Upper and Forepart of the *Processus Annularis*.
- Z Z, *Par Patheticum*, or the Fourth Pair of Nerves.
- a a, The Fifth Pair of Nerves.
- b b, The Sixth Pair of Nerves.
- NB. The Seventh Pair of Nerves are not here exprest, tho' *Bidloo* pretends to describe them at c c d e.
- c c, d, e, f, g, Confused Descriptions of several Pairs of Nerves erroneously multiply'd into divers Pairs by *Bidloo*.
- h h, The Spinal Accessory Nerves.
- ** The Beginnings of the Ninth Pair of Nerves.
- i i, k k, The Tenth Pair of Nerves, or the First of the Neck.

Fig. 2.

Part of the Brain on the *Basis* of the Skull.
A A, The Forepart of the Brain.
B, The Fingers which support it, so that the following Parts come in view.

- C, The *Infundibulum*.
- D, The *Glandula Pituitaria* lying within the *Cella Turcica*.
- E, The Membranous Connection of the *Infundibulum* to the *Glandula Pituitaria*.
- F, A Blood Vessel passing thro' the Lateral Part of the *Os Cuneiforme*, which *Bidloo* has grossly mistaken for the Olfactory Nerves.
- G G G, Portions of the Optick Nerves so divided, that Parts of them remain on the *Basis* of the Skull, as well as on the Brain it self.
- H H, The Third Pair of Nerves, call'd *Motorii Oculi*, in situ.
- I I, The Internal Part of the *Basis* of the Skull.
- K K, The *Dura Mater*.

Fig. 3.

- The Internal Part of the *Basis* of the Skull, after the Brain is taken out, and Portions of the Ten Pair of Nerves of the Brain remaining at their Egress, together with Part of the *Dura Mater*.
- A A, &c. The Edges of the divided Skull in which the *Duploi* may be seen.
- B B, The *Os Crista Galli*.
- C C, The *Os Cribriforme* on both Sides.
- D D, &c. Part of the *Dura Mater* cleaving to the *Basis* of the Skull.
- E E, The *Os Occipitale* bared from the *Dura Mater*.
- F F, Portions of the Olfactory Nerves cut off, near their Egress at the *Os Cribriforme*.
- G G, The Optick Nerves in like manner cut off, before they pass the First *Foramina* of the *Os Sphenoides*.
- g g, The Carotid Arteries also divided.
- H H, The Third Pair of Nerves cut off.
- I I, The Pituitary Gland within the *Cella Turcica*, lying under the *Dura Mater*.
- K, The *Infundibulum*.
- L L, The Fourth Pair of Nerves, or *Par Patheticum* going out of the Skull, with the Third and Sixth Pair of Nerves.
- M M, The Fifth Pair of Nerves.
- N N, The Sixth Pair of Nerves running under, or in the Duplication of the *Dura Mater*, at a considerable Distance before they march out of the Skull at the Two Second Perforations of the *Os Sphenoides*. *Vid. Tab. 89. Fig. 2. C. D. I.*
- O O, The Seventh, or Auditory Nerves passing out at the *Offa Petrosa*.
- NB. That O on the Right Side should have been placed a quarter of an Inch below the M on the same Side.
- P, The Eighth Pair of Nerves, or *Par Vagum* going out at the Second Perforations of the *Os Occipitis*, with the Lateral *Sinus's*, which lead to the Internal Jugular Veins.
- Q Q, The Spinal Accessory Nerves passing out of the Skull with the *Par Vagum*.
- R R, The Ninth Pair of Nerves passing thro' the Third Perforations of the Occipital-bone.
- T, The First and great *Foramen* of the *Os Occipitis*, by which the Spinal Marrow passes out of the Skull to the *Specus* of the *Vertebrae* of the Back.
- The *Sinus's* of the *Dura Mater*, which appear where it cleaves to the Internal Part of the *Basis* of the Skull, are exprest in a Figure of our *Appendix*; where the Egress of the Ten Pair of Nerves of the Brain are also represented, together with the most considerable Blood-Vessels, which come in, and go out from the Cavity of the Skull.

Fig. 3.



Fig. 2.

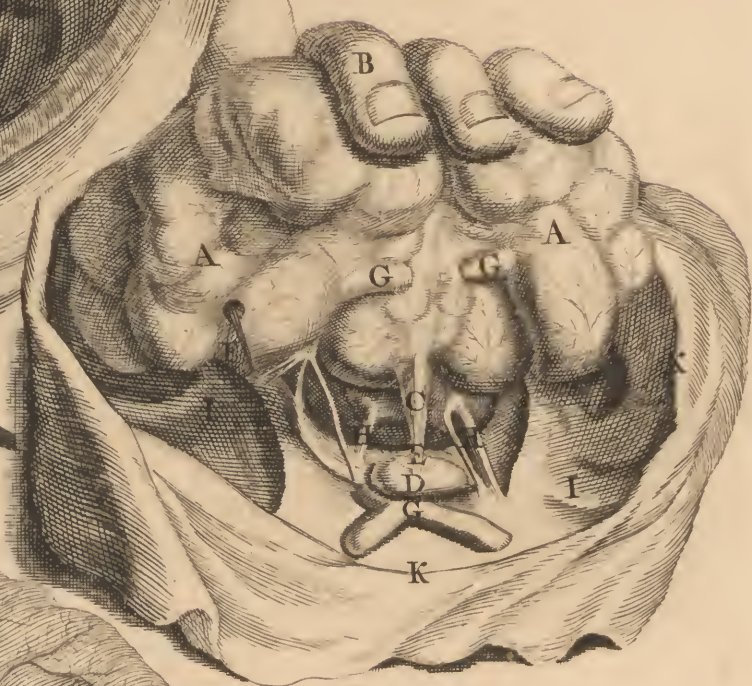
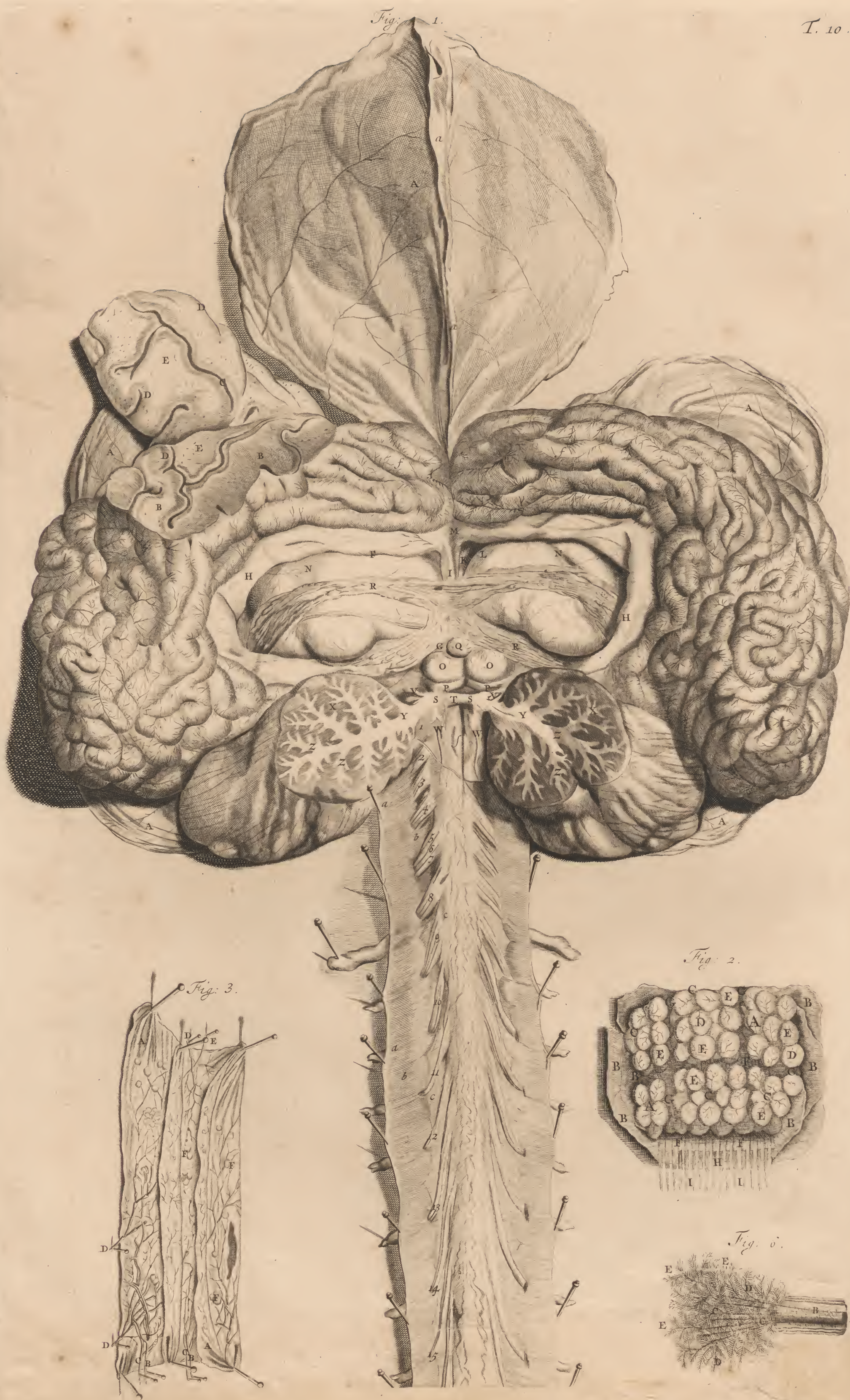
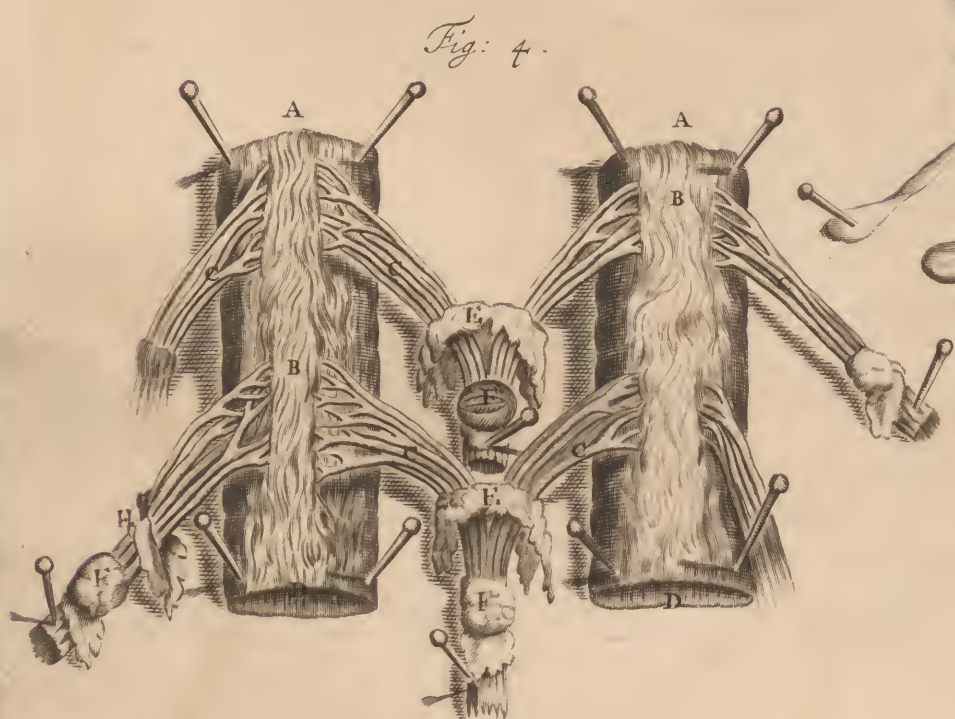
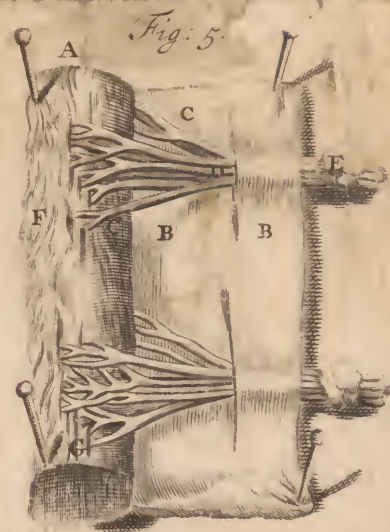


Fig. 1.







THE TENTH TABLE.

Fig. 1.



THE Brain together with the *Medulla Oblongata* continu'd to it, when free'd from the Skull, and *Specus* or Cavity of all the *Vertebrae* of the Neck, Back, and Loins.

A A, The *Dura Mater* free'd from the Brain, and somewhat expanded.

a a, Part of the *Falx*.

BB, Part of the Brain cut Transversely.

C, The Division in its Cortical Part, which compose those turnings, and windings on its External Surface.

DD, The Cortical, or Cinericious Part of the Brain; by some call'd the Glandulous Part.

EE, The Medullary, or white Part of the Brain; by some call'd the Callous, and Fibrous Part.

ff, The Hindmost Part of the Brain, which rested on the Second Process of the *Dura Mater*.

FGH, The Right and Left Ventricles of the Brain open'd; where the Blood Vessels of the *Pia Mater*, which Line them, may be seen: F, their Upper and Foreparts, which are largest, and become still less, and less towards their Lower, and Back-parts, G.

HH, The *Corpus Callosum*.

IK, The Roots of the *Fornix*.

L, The *Thalamus Nervi Optici* of the Right Side; that of the Left, not being Letter'd.

M, The *Corpus Transversale* of the *Corpus Callosum*.

NN, Parts of the *Corpora Striata* whole.

OO, The *Nates*.

PP, The *Testes*.

Q, The *Glandula Pinealis*, in situ.

RR, The *Plexus Coroeides* compos'd of Blood Vessels of both Kinds, Lympheducts, Membranes, and Glands. See Fig. 3.

SS, The First Process of the *Cerebellum*, going to the *Nates*.

T, A Transverse Process joyning the Two Pathetick Nerves, and last mentioned Process.

f, The Fourth Ventricle, call'd *Calamus Scriptorius*.

VV, The Pathetick Nerves.

WW, Two Processes of the Spinal Marrow which compose the Sides of the Fourth Ventricle.

XYZ, The *Medullum* of the *Cerebellum* appearing in an Arborescens Manner, after a Transverse Section of the *Cerebellum*.

a b, &c. The *Dura Mater*, which incloses the Spinal Marrow, divided, and expanded.

c c, &c. The *Pia Mater* as yet inclosing the *Medulla Spinalis*, but raised with a Probe in its Lower Part, where it inverts the *Cauda Equina*.

1 2 3, &c. The several Pairs of Nerves springing from the *Medulla Spinalis*: From 1 to 9 the Origins of the Nerves of the Neck; the First of which passes out at the Third Perforation of the *Os Occipitis*, and is reckoned the Tenth of the Brain; the rest march out between the *Vertebrae* of the Neck, Back, Loins, and Perforations of the *Os Sacrum* successively; that of Fig. 9 marching out between the Sixth and Seventh *Vertebra* of the Neck; those of 10 to 21 are the Nerves of the Back: From 22 to 27 those of the Loins; the rest go out at the *Foramina* of the *Os Sacrum*.

Fig. 2.

AA, Part of the Brain boyld, and view'd with a Microscope.

BB, The Membranes of the Brain separated; of which the External is the *Dura Mater*; the Two Internal compose the *Pia Mater*.

CD, The Reticular Distribution of the Blood Vessels near their Extremities.

EE, Divers Orders of Cortical Glands on the Surface of the Brain.

FF, The Tubes deriv'd from those Cortical Glands.

GG, The Lobes, or distinct Clusters of Glands wreathed with various Angles.

HH, The Complicated Tubes.

II, The Nervous Fibres deriv'd from the last mentioned Tubes.

Fig. 3.

Part of the *Plexus Coroeides* delineated, by the help of a Magnifying Glass.

AA, The Membranous inclosures of the *Fasciculi* of the Vessels, separated.

BC, The Blood Vessels extended with Plaister of Paris, and their own Blood.

DD, Branches of Lympheducts, somewhat extended with Wind.

E, Nervous *Tubuli* according to *Bidloo*, which I can by no means conceive to be existent in the *Plexus Coroeides*.

FF, The Glands of the *Plexus Coroeides* placed irregular, of which, some are Hard, and Fibrous, others are Vesiculous, and Flaccid.

Fig. 4.

A Portion of the *Medulla Oblongata* cut off, and divided laterally according to its Length; express'd somewhat bigger than the Life.

AA, The Upper Part of the *Medulla Oblongata*.

BB, The Fore and Back Part.

CC, The Nervous *Fibrille* arising from the Fore, and Back Part of the Spinal Marrow.

DD, The Inferior Part of the Spinal Marrow cut off.

EE, Portions of the *Dura Mater* left, to shew its Perforations for the Nerves, as they pass out of the *Specus* of the *Vertebra*.

FFF, The *Plexus Gangliiformes* of the Nerves at their Egrefs

from between the *Vertebrae*: Two or Three of the Bodies of the Nerves themselves are express'd in this Figure pinn'd out.

Fig. 5.

A Portion of the *Medulla Spinalis*, cut off about the Third *Vertebra* of the Back, express'd somewhat bigger than the Life.

A, The Upper Part of the Spinal Marrow.

BB, A Portion of the Continuation of the *Dura Mater* expanded.

CC, The Nervous Fibres arising from the Fore and Back Parts of the Spinal Marrow.

D, The Nervous *Fibrille* collectively passing thro' the *Dura Mater*.

E, Their Gangliiform *Plexus* at the Beginnings of the Bodies of the Nerves.

F, A Division of the Spinal Marrow according to its Length.

G, Some *Vestigia* of Blood Vessels, which pass on the Outside of the Spinal Marrow.

Fig. 6.

The Structure of a Nerve express'd by the Assistance of a Microscope.

A, The Branch of a Nerve dissected from the Neck.

B, The Blood Vessels passing in the Nervous *Fibrille*: These Blood Vessels I had an Opportunity once of discovering with my naked Eye in a very small Branch of the *Par Quintum* of the Head, where they were fill'd with *Mercury*, by pouring it into the Carotid Artery; but in examining the same Branch of the Nerve with my Microscope, I discovered a vast Number of smaller Branches of Blood Vessels, which did not before appear, lying still parallel with the Nervous Fibres, as here express'd; tho' without doubt divers of the Trunks of those Blood Vessels do intersect, and pass obliquely over the Nervous Fibres, especially near their Extremities.

From those Blood Vessels I am inclin'd to think the Globular Contents of the Nervous Fibres take their rise immediately, and not from the Brain, as it has been generally suppos'd; since the Fibres of the Brain, as well as the Nerves themselves do neither of them appear Tubulated, or hollowed Pipes according to their Length; but their Cavities are frequently interrupted with divers Cells, which make a Globular like Appearance; and this Structure of the Nervous Tubes is very easily demonstrated in the *Tunica Retina* of the Eye by the Assistance of the Microscope.

CC, A *Fasciculus* of the Nervous-Tubes separated, and expanded.

DD, The Cohesion of the Tubes by lateral Fibres.

EE, The Villous Extremities of the Tubes as they could be delineated. What has been said above, relating to the intimate Structure of the Nerves, interferes very much with those *Hypotheses* commonly propos'd concerning the Animal Spirits, by some call'd *Fluidum Animale*; and that not only because their Original is suppos'd to be in the Brain, but that they are transfer'd from thence by the Nerves so very quick to serve those Offices, to which they are on such frequent Occasions said to be employ'd in: Neither of which can reasonably, nay possibly, happen, from the Structure of the Nerves themselves: Besides, if the Animal Spirits, or Fluid were ordered to skip up and down at that rate, another visible Impediment would be incident to obstruct them, at the Originals of the Nervous Tubes from the *Medulla Spinalis*; where those Tubes are much contracted, and again expanded, and frame *Ganglions*, as appears in this Figure at E; nor can we conceive what should give the Spirits that *Impetus* to drive them up and down in that manner; wherefore we should rather incline to believe the Contiguities of those *Globuli*, above mentioned, are the Mediums between the Objects, and Common Sensory. There is too much of Argument belongs to this Subject, to be inserted in this Place; wherefore we must proceed in our present Undertaking.

Fig. 7.

A Portion of the *Medulla Spinalis* taken out of the *Specus* of the *Vertebrae* of the Back, together with its Common Integument.

AA, The Back Part of the Spinal Marrow next the Spines of the *Vertebrae*.

BB, The External, or Common Integument (accompanying that of the *Dura Mater* the whole Length of the *Specus* of the *Vertebrae*) here being partly rais'd and supported with a *Stylus*.

D, The *Dura Mater*, or First Proper Membrane of the Spinal Marrow.

EEE, Divers *Sacculi* of Fat lying between the Proper and Common Membranes of the *Medulla Spinalis*.

Fig. 8.

The Inferior Part of the First *Vertebra* of the *Thorax*:

A, Its Spinal Process,

BB, Its oblique descending Processes, which are Articulated with the ascending Processes of the Superior Part of the Second *Vertebra* of the *Thorax*;

CC, The Transverse Processes.

D, The Body of the *Vertebra*.

E, The great *Foramen* of the *Vertebra*, in which the *Medulla Spinalis* descends.

FF, Some fatty Mucilaginous Glands, which are continued thro' the Inside of the whole *Specus* of the *Vertebra*.

The Office of these Glands is to separate a Liquor to lubricate the Membranes of the *Medulla Spinalis*, and Inner Part of the *Specus*; which Liquor I have frequently found in such Quantity, as to run out, in breaking up the *Vertebrae* to discover the Spinal Marrow.

THE ELEVENTH TABLE.

Fig. 1.



HE External Parts of the Eye, as they appear when the Eye-lids are open'd.
A B, The Eye-brow : B, the various Disposition of its Hairs in this Subject.
C, The Great Canthus of the Eye next the Nose.
D, The Lesser Canthus.
E, The Upper Eye-lid.
F, The Lower ———
G, The White of the Eye cover'd with the *Tunica Adnata* or *Conjunctiva*.
H, One of the Lacrimal Glands plac'd in the great Canthus of the Eye, call'd *Canicula Lacrimalis*, and *Glandula Lacrimalis Inferior*.

Fig. 2.

The Eye-lids shut.
A, The Eye-brow, as in the former Figure.
C, The Great Canthus of the Eye towards the Nose.
D, The Lesser Canthus.
E, The Superior Palpebra.
F, The Inferior Palpebra.

Fig. 3.

A A, The Skin with the *Musculus Orbicularis Palpebrarum* remov'd.
B, The Bone of the Upper Part of the Orbit of the Eye bared.
C, The Great Lacrimal Gland involv'd with Fat.
D D, A faint Appearance of the Excretory Ducts of the Lacrimal Glands, by *Borriehus*, call'd *Hygrophthalmicos*.
E E, Divers little Glands interpos'd between the last mention'd Ducts.

Fig. 4.

Parts of the Muscles of the Eye-lids.
A, Part of the *Musculus Aperiens Palpebram Rectus*, at its Implantation to the Upper Eye-lid : The Origin of this Muscle is sharp and fleshy at the profoundest Part of the Orbit, near the Egrels of the Optick Nerve, accompanying the *Rectus Oculi Atollens* in its Progress, becoming broad, thin and tendonous, as it passeth over the Superiour Part of the Bulb of the Eye, to its Implantation at the whole Superior Part of the Upper Eye-lid.
B C, A Portion of the Upper Part of the *Orbicularis Palpebrarum* turn'd down, it still remaining to the Upper Eye-lid: A Description of which Muscle will be inserted in the following Table. Fig. 4.

Fig. 5.

The Lacrimal Glandules, &c. within the Orbit of the Eye, represented much bigger than the Life.
A A, The Upper Part of the Bones of the Orbit.
B B C, The Superior Lacrimal Gland.
D D D, The *Vasa Lacrimalia*, or *Ductus Hygrophthalmici*, whose Orifices open into the Internal Part of the Palpebrae, whence the separated Liquor, convey'd by the Tubes, issues to moisten the Palpebrae, and External Part of the Bulb of the Eye.
E E E, Divers Lacrimal Glands interspers'd between the last mention'd Ducts.
F F G G, The Cartilages of the Cilia joyn'd together with divers Membranes G.
H H, The Hairs of the Eye-lids turn'd Upwards, whose Ramifications appear.
I, Part of the Superior Lacrimal Gland, by *Bidloo* call'd *Gland Lacrimalis*.
K K, The Bones of the Nose broken off, so that the following Ducts may appear.
L, The Ducts, which convey the superfluous Moisture of the *Vasa Lacrimalia* from between the Palpebrae, and Bulb of the Eye, into the *Foramina Narium* : The Orifices of these Ducts appear in the two *Papillae* of the Upper and Lower Eye-lid, at the Great Canthus of the Eye. Fig. 1. H. and are evident to the naked Eye, especially in those, who Cry much, and are call'd *Puncta Lacrimalia* : Soon after these Two Ducts leave the Great Canthus of the Eye, they are united into One Trunk, call'd the Lacrimal Duct, which descends in a *Foramen* of the Second Bone of the Upper Jaw, *Tab. 92. Fig. 1. D.* into the Cavity of the Nostrils. In the great Canthus of the Eye arise those Tumours, call'd *Agilopes*, whose contain'd Matter, when it degenerates into an Abscess, frequently frames *Fistulae* in that Part; and when the Membrane, which composes the Lacrimal Duct, within the Cavity of the Bone, becomes Tumified; the Passage of that Duct is rendred impervious, and Part of the Humor employ'd in moistning the Eye-lids, is hindered in its Discharge that Way; whence the Cheeks become inflam'd by its running down on them; in which latter Case, besides opening the Tumor largely, we must also Perforate the Second Bone of the Upper Jaw or *Os Lacrimale*, into the Cavity of the Nose, whereby the Lacrimal Humor will afterwards be discharg'd : This Operation is best Practis'd with a pointed Actual Cautey, fitted with a proper *Cannula* or Director. The Incision in these Cases may be made according to the Direction of the Fibres of the *Musculus Orbicularis Palpebrarum*; and in using the Actual Cautey, great care must be taken to defend the Palpebrae; which we have sometimes seen expos'd to the heated *Cannula* thro' the Struggling of the Patient: After this Operation is thus perform'd, it is not necessary you should keep the External Wound open to expect an Exfoliation of the Fragments of the Bone thro' it; but after Three or Four days, when the Callosity is remov'd, and the Matter discharg'd, you ought to lessen your Dozils, or Tents, and permit the *Sinus* to fill with Flesh, and hasten a Cicatrice, and the Edges of the perforated Bone will pass off by the Nostril, as well as that Part of the Bone thrust in by the Cautey. Nor will any great Inconveniency follow if the Healed up Part should Imposthumate again, thro' the moving of the Fragments of the Bone towards the External Wound, if it is again open'd by Incision to discharge them; but should you keep the External Wound open long, either by hard Tents, or Elcharoticks, you will not only procure a Discharge of the superfluous Tears, or Moisture that way; but the Perforation made in the *Os Lacrimale* will fill up, and you must be oblig'd to repeat the Use of the Actual Cautey, or thrust a Probe thro' it. I had almost forgot to tell you, that after the First Incision made in the External Parts, it is necessary you should pass your Knife down to the very Bone, and divide the Trunk of a large Artery, and Vein, which pass that way with the Lacrimal Duct, lest the Flux of Blood at the time of the Operation should so cool the Cautey, as to prevent its Action.

Fig. 6.

The Bulb of the Eye lying within the Orbit after the Superior Palpebra is remov'd.
A B, The *Tunica Adnata* plac'd on the Forepart of the Sclerotic.
C, The Iris, in whose Center is the *Pupilla*.
D D, The Lower Eye-lid, in *sinu*, together with Part of the Upper, dissected.
E, The Bone of the Orbit.
F, The Margin of the Lower Eye-lid, where the Hairs grow out.

Fig. 7, and 8.

The Muscles of the Eye, as they appear within the Orbit, when clear'd of the Fat, and adjacent Parts.
A, The *Musculus Atollens*.
B, (Fig. 8.) *Musculus Adducens*.
C, *Deprimens*.
D, *Abducens*.
E E, The Internal Part of the Bones of the Orbit.
H, The Tendon of the *Musculus Obliquus Superior* passing thro' the *Trochlea* K, to its Insertion behind the *Musculus Atollens*.
I, The External Part of the Bones of the Orbit next the Nose.
K, The *Trochlea*, or little Cartilage, on which the Tendon of the Oblique Superior Muscle is reflected.
X, Fig. 7. The Optick Nerve.

Fig. 9.

The Fore-parts of the Muscles of the Right Eye, when taken out of the Orbit, and clear'd from the Fat, Membranes, and Glands, a; and Expanded.
A, *Atollens*.
B, *Deprimens*.
C, *Adducens*, which *Bidloo* calls *Abducens*.
D, *Abducens*, which he in like manner mistakes, and calls *Adducens*.
E, *Trochlearis Musculus*, or *Obliquus Superior cum Trochlea*.

F, The *Trochlea* Cartilage, exprest in *sinu*. Fig. 7. K.

G, The *Musculus Obliquus Inferior*.

H H H, The *Tunica Adnata*, together with another Membranous Tegument deriv'd from the Tendons of the Four straight Muscles, mention'd by *Realduus Columbus*. Lib. X.

I, Is scarce seen, but is plac'd in the Center of the Bulb, and distinguishes the *Pupilla*.

K, Part of the Optick Nerve.

Fig. 10.

The Back Parts of the Muscles of the same Eye, when taken out of the Orbit, &c.

A, The *Musculus Abducens*, or *Indignatorius*.

B, *Adducens*, or *Bibitorius*.

C, *Obliquus Inferior*, or *Brevissimus Oculi Musculus*.

D, *Atollens*, or *Superbus*.

E, *Deprimens*, or *Humilis*.

F, *Obliquus Superior*, seu *Longissimus Oculi Musculus*.

G, The *Trochlea* Cartilage.

H, A Portion of the Optick Nerve.

I, The Back Part of the Bulb of the Eye, compos'd by the *Tunica Sclerotica*.

Fig. 11.

The Bulb of the Eye and Optick Nerve free'd from the Muscles and their Common Membranes, so that the proper Membranes of their Surface appear.

A, Part of the *Tunica Adnata*, which is continued to the Internal Part of the Palpebrae, which can by no means prevent the Retraction of the Eye, when any of the straight Muscles Act, as some Anatomists conjecture.

B D, The *Tunica Sclerotica*.

C, The *Tunica Cornea*, circumscrib'd by the Iris, in whose Center is the *Pupilla*.

E, The Optick Nerve cover'd with a Tunick deriv'd from the *Dura Mater*.

Fig. 12.

A A, The Sclerotic open'd, to shew the Choroeide Tunick immediately under it.

B, The *Tunica Choroeides*.

C, The *Cornea*, Iris, &c. as in the preceding Figure.

Fig. 13.

Part of the *Ligamentum Ciliare* view'd with a Microscope.

A A B B, The *Ligamentum Ciliare* consisting of Two Sorts of Fibres; the one extended thro' its whole Breadth, A A; the other end in the Mid-way B B: Between these are plac'd divers Lympheducts according to *Bidloo*. This Musculous Contexture of the *Ligamentum Ciliare* moves the *Uvea*, or Fore-part of the *Tunica Retina* composing the Iris, by which means the Inner Edge of the Iris approaches towards the Center of the *Pupilla*, or is retracted, whereby the Pupil is enlarg'd, or diminish'd according to the different Radiation of Light. In some Animals, as Cats, &c. we find a Musculous Structure in the Iris also, for a more effectual narrowing their Pupils; which Contrivance in those Creatures, perhaps, is the more requisite in regard their Horny Tunicks have a Surface not so prominent in Proportion to the Bulbs of their Eyes, as those of other Animals.

Fig. 14.

The Bulb of the Eye together with a Portion of the Optick Nerve, where a Division of the *Tunica Sclerotica* together with the *Choroeides* is made, to exhibit the *Tunica Retina*.

A, The *Tunica Retina*.

Fig. 15.

Part of the Optick Nerve together with the Tunicks of the Eye, after the Humors (Fig. 19, 20.) are taken out.

A, The Inner Surface of the *Tunica Retina*.

Fig. 16.

Another View of the Internal and External Surface of the Tunicks of the Eye, after the Humors are discharg'd.

A A, The *Tunica Sclerotica*.

B, The *Cornea*.

C, Part of the Optick Nerve.

Fig. 17.

The Internal and Fore-part of the Tunicks of the Eye, when the Humors are discharg'd by a transverse Section thro' the Bulb.

A, The *Tunica Cornea*.

C, The Inner Surface of the Iris, next the *Ligamentum Ciliare*.

D, The *Tunica Retina* Choroeides, and Sclerotic together.

Fig. 18.

The Inner Surface of the Back Part of the last mention'd Tunicks of the Eye.

A, Part of the Optick Nerve cut off; in which Division its Blood-Vessels are exprest.

B, The *Tunica Sclerotica*.

C, The *Tunica Retina*, in *sinu*.

Fig. 19, and 20.

The Vitreous and Crystalline Humors of the Eye, when taken out of the Tunicks.

A, The Crystalline Humor.

B, The *Vestigia* of the Ciliar Ligaments on the Vitreous and Edge of the Crystalline Humor.

C, The Vitreous Humor.

Fig. 21.

A B, The Crystalline Humor taken out; A, its Fore-part next the Aqueous Humor; B, as it appears Laterally.

The Aqueous Humor cannot easily be exprest after the Life, wherefore we shall here speak of its Interstice, where it is lodg'd, whereby its Figure is circumscrib'd; its Fore-part is Convex by means of a Concave fram'd by the *Cornea* in the Center, and Iris in the Circumference; the Back Part of the Aqueous Humor is Concave, to receive the Convex Surface of the Crystalline Humor; it's sides are Circular, conformable to the Cavity of the Bulb; whence it appears the Aqueous Humor is Circular in its Circumference, Convex forewards, and Concave backwards, like the following Figure.



Fig. 22.

A, The External and Fore-part of the Vitreous Humor.

B, A Concave in the Vitreous Humor, which receives the Crystalline Humor. The Tunicle, which is said to inclose the Vitreous Humor, do's not appear, but when it is expos'd to the Air; wherefore *Dr. Briggs* supposes it to be merely adventitious.

Fig. 23.

A B, The Crystalline Humor dri'd; which *Bidloo* according to some Anatomists, calls *Tunica Aranea*, or *Crystallaeides*.

Fig. 24.

A B, The Vitreous Humor dri'd in like manner; leaving its supposed investing Membrane only.

I should in this place (as I have hitherto, and shall hereafter in describing of Parts, to which any considerable Operation of Surgery do's belong) speak of the Couching of Cataracts; but I am afraid I have already transgress'd the limits of my Page; wherefore I shall only tell you that in Practising that Operation, the Puncture thro' the *Adnata*, ought to be at a greater Distance from the *Pupilla*, than Authors commonly direct; and that a round Needle is to be prefer'd; for the edges of the Needle else are lyable to wound the Blood-Vessels of the Choroeide Tunick largely, and an Extravasation of Blood happens between that Tunick, and the Sclerotic; which may be of ill consequence to the Patient.

Fig. 1.

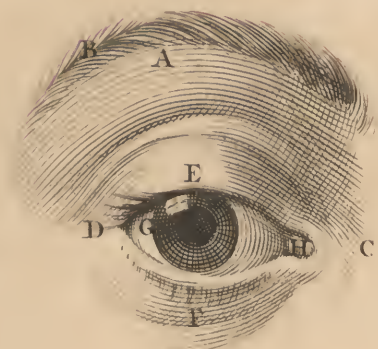


Fig. 2.

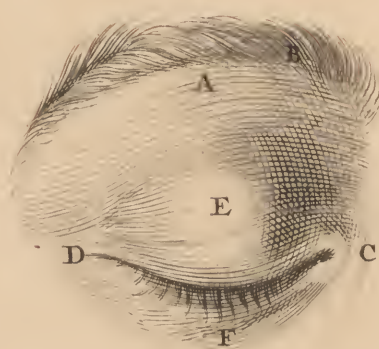


Fig. 3.



Fig. 6.

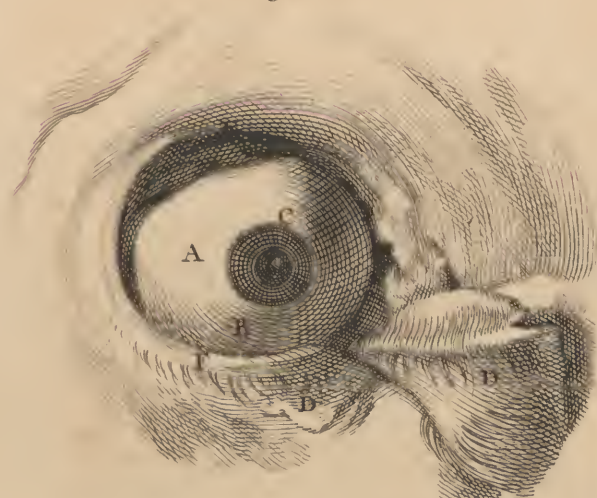


Fig. 7.



Fig. 8.



Fig. 9.



Fig. 10.



Fig. 11.

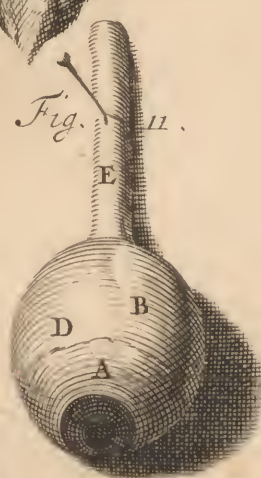


Fig. 12.



Fig. 14.

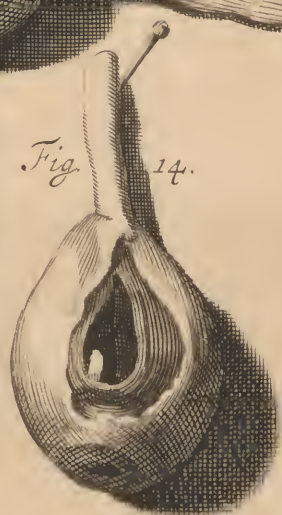


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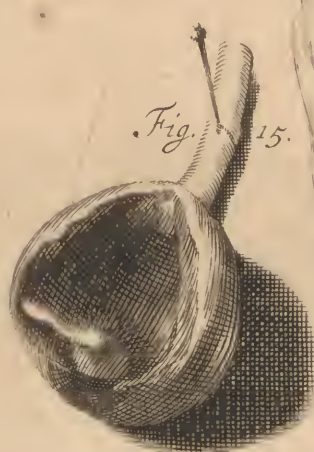


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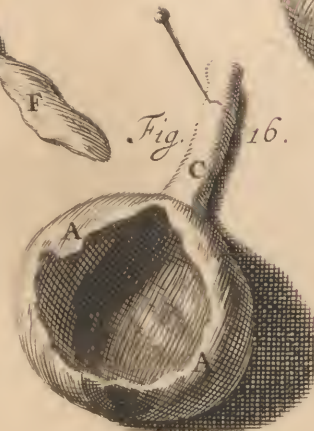


Fig. 21.



Fig. 17.



Fig. 18.

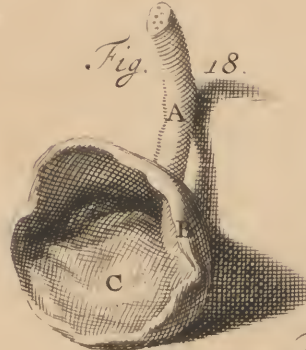


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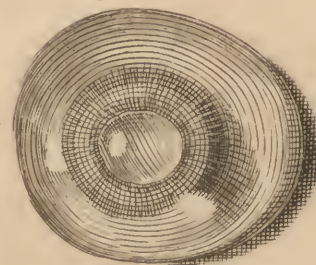


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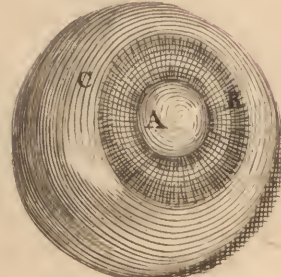


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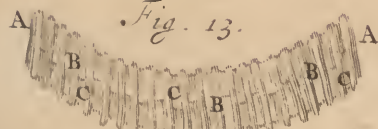


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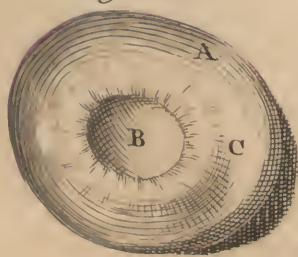


Fig. 5.



Fig. 4.



Fig. 23.

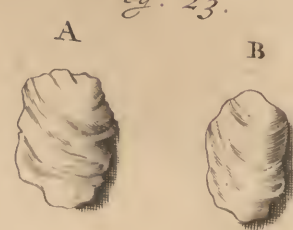


Fig. 24.



Fig. 3.



Fig. 4.



Fig. 2.

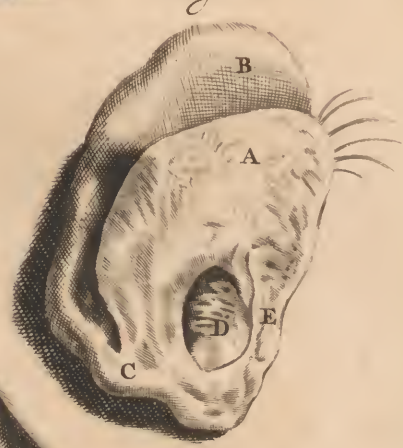
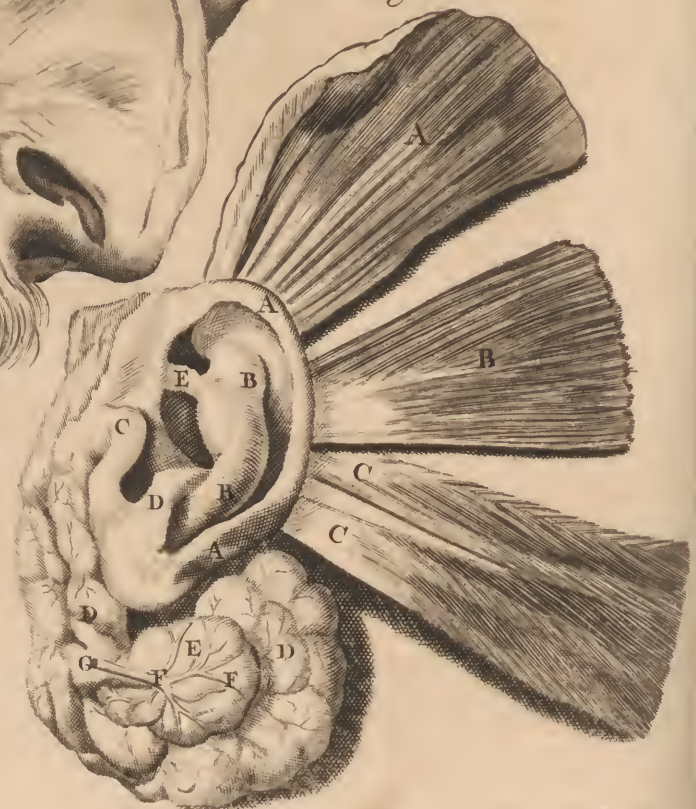


Fig. 5.



Fig. 1.



T H E T W E L F T H T A B L E.

Fig. 1.



N this Figure there is a Repetition of the same Letters of the Alphabet; the one on the External Parts of the Auricle; the other on its Muscles, and Parts adjacent:

The First.

A A, The External Margin of the Outward Ear, call'd *Helix*, and *Capreolus*, from its Tortuous Disposition.

BB, *Anthelix Auriculæ*.

C, *Hircus Auriculæ*, by some call'd *Antitragus*.

DE, Circumscribe the *Concha*; D, *Tragus Auriculæ*, below which is the *Lobus*.

The Second.

A, The *Musculus Attollens Auriculam*; which derives its partly fleshy, and Membranous Origin, from above the Temporal Muscle, and descending over it to its Insertion at the Superior Part of the Cartilage of the Root of the Auricle.

BCC, The *Musculus Retrahens Auriculam*, whose Origin we have always observed with *M. Du Verney*, to be from the *Apophysis Mastoidea*; the whole Muscle is here express'd much larger than it is commonly found.

DD, Part of the Parotid Gland cleaving to the Outward Ear:

FFF, The Excretory Ducts arising from that Gland, which compose the *Ductus Salivalis Superior*.

G, Part of the *Ductus Salivalis Superior*.

Fig. 2.

Exhibits the Back Part of the Auricle, when cut off.

A, The Skin, &c. divided from the Hairy-Scalp, and freed from the *Cranium*.

B, The Internal, or Back Part of the Ear next the Skull.

C, The Inferior Part of the Auricle.

D, The *Meatus Auditorius*;

E, The Thickness of its Cartilage.

Fig. 3.

Represents the Ramifications of the *Ductus Salivalis* injected with Wax, and freed from the Parotid Gland.

A, The Trunk of the *Ductus Salivalis* cut off at its Progress over the *Musculus Masseter*.

BB C, The Ramifications of the Salival *Ductus* freed, which arise from the Extremities of the Arteries within the Parotid Gland.

Fig. 4.

Represents divers Muscles of the Face after the *Quadratus Genæ* is taken off.

A, This formal Appearance of circular Fibres about the *Ala Nasi*, I suspect to be fictitious, having never observ'd such a Disposition in any Subject, tho' I have purposely examined this Part; yet the like Figure of them may be seen in *Placentinus*.

B, A Muscle, whose Position renders it capable of pulling up the *Ala Nasi*; whence it is called *Elevator Ala Nasi*; and by *Casseri*, *Pyramidalis*, from its Figure; nor do we commonly find this Muscle in Dissection; the fleshy Fibres on this Part, frequently taking the same Course with those of the *Orbicularis Palpebrarum*, do pass by the *Ala Nasi*.

C, The *Musculus Elevator Labii superioris proprius*.

DD, The *Orbicularis Palpebrarum*; This is a thin fleshy Muscle, circularly environing the Eyelids, to which it is inserted, not unlike the *Sphincter* Muscles of other Parts, as of the Lips, and the Bladder of Urin: It acts in drawing the Eyelids nearer each other; which we call shutting the Eyelids; but if this Muscle Acts vigorously, it not only draws the Eyelids close together, but forces the Bulb of the Eye into the Orbit. *Galen*

and the ancient Anatomists not discovering the *Musculus Aperiens Palpebrarum Rectus*, (since found out by *Fallopian*;) were at a loss for assigning a proper Instrument to draw up the Upper Eyelid; wherefore they erroneously divided this Orbicular Muscle into Two: The like error has been incident to some later Writers, among which *Bidloo* falls into the same Mistake.

E, The *Zygomaticus* or *Distortor Oris*.

F, A Branch of an Artery, which arises from the Carotid in the Neck, and passing through the Inferior Maxillary Gland, runs over the Lower Jawbone, at the Insertion of the *Masseter* Muscle, as it is here express'd.

I have frequently met with Tumors on this Part, which have required Incision; in which Case the dividing of this Artery ought to be regarded; wherefore I have rather chosen first to make Two Perforations, one on each Side this Artery, whether by Caustick or otherwise, and then pass a Ligature to comprehend the Artery for some Days; and tho' I cannot advise the Practice of letting the Ligature divide the whole, by frequently straightening it; yet in Three or Four Days time the Ligature will so compress the Artery, that you may cut through free from any dangerous Flux of Blood.

G, The *Os Jugale*.

H, The Lower Jawbone made bare by the removing of the Skin, and *Musculus Quadratus Colli*.

I, Part of the Carotid Artery.

KMN, The Temporal Muscle; K N its Outside; M its Inside next the *Cranium* turned down.

L, Part of the Parotid Gland, the greater Part of which Gland being cut away, to exhibit the following Muscle.

O, The *Musculus Masseter in situ*: The Origination, Progress, and Insertion of this, and the Temporal Muscle, are sufficiently express'd in this, and the following Figure.

Fig. 5.

Exhibits the Muscles of the Lips, and some of those of the Lower Jaw.

ABC, The *Musculus Buccinator* freed from its Origin at the *Processus Coronæ* of the Lower Jaw, (nearer N) and left at its Insertion at the Angle of the Lips: Here we may observe, that in this Figure (as in the Life) the Fibres of this Muscle run according to its Length, contrary to the Description *Bidloo*, and others give of it; through this Muscle passes the *Ductus Salivalis* of the Parotid Gland into the Mouth.

D, The *Musculus Elevator Labiorum Communis*; This arises from the *Os Quatum* of the Upper Jaw, and descends directly to its Insertion under the Termination of the *Zygomaticus*; in this Figure (as we have likewise seen it) a Fasciculus of fleshy Fibres of this Muscle run over the Termination of the *Zygomaticus*.

EE, The *Elevator Labii superioris proprius*, and the *Musculus Dilator Ala Nasi*.

F, The *Musculus Zygomaticus*.

G, *Depressor Labiorum Communis*.

H, *Depressor Labii inferioris proprius*.

I, *Constrictor Labiorum*.

KMN, The *Temporalis*; N, its Implantation at the *Processus Coronæ* of the Lower Jaw.

L, Part of the Parotid Gland.

O, The *Masseter* cut from its Origin at the *Os Jugale*, and left at its Insertion to the Lower Jaw.

PQ, Part of the Origin of the *Musculus Pterygoideus externus in situ*; This springs from the External Part of the *Processus Pterygoideus*, and Upper Part of *Os Sphenoides*, and runs backwards to its Insertion at the Neck of the *Processus Condylodes*: To discover the Progress of this Muscle, the *Processus Coronæ* should be cut off with a Chisel.

R, The *Processus Condyliformis* of the Lower Jaw, which is here in a great Part lay'd bare.

S, Part of the *Musculus Digastricus* of the Lower Jaw.

T H E THIRTEENTH TABLE.

Fig. 1.



THE External Parts of the Nose, together with the Tongue, *Fauces*, *Gargareon*, and the like, *in Situ*.
A, The Back of the Nose.
B, The Spine,
C, The Tip,
D, The *Septum Narium* or Bridge,
E E, The *Alae Nasi* or Sides of the Nose.
F F F, The Cheeks divided, so that the Parts within the Mouth may appear.
G, The Tongue.
H, The *Gargareon* or *Uvula in Situ*, cover'd with the Glandulous Membrane of the Palat.
I, The *Tonsillae* described in our *Appen. Fig. 9*.
K K, The Gums of both Jaws.
L L, The Palat or Roof of the Mouth, whose Glandules are exprest *Tab. 14. Fig. 4. B C*.
M, The Upper Part of the *Epiglottis* raised through the Depressure of the Tongue. We seldom see the *Epiglottis* in looking into the Mouths of Living People; but in some few I have some times seen its Upper Part, by very much depressing the Tongue to inspect the *Fauces*; in such Persons some (very Ignorant in Anatomy) have taken it for an Excrecence, and have propos'd its Extraction. A Mistake; equally as pernicious, has been incident to some Practitioners, in supposing the *Foramina* of the *Excretory Ducts* of the *Tonsillae* when fill'd with a Tenacious Matter, (as in Cases of taking Cold, as it's call'd, &c.) to be Ulcers; as *Fallopins* takes notice.

Fig. 2.

The Outward Covering of the Tongue view'd with a Microscope: This Figure together with the 3^d, 4th, 5th, 6th, 7th, and 8th, were done after the Tongues of some *Quadrupedes*, as of Bulls, Sheep, or the like. With the Assistance of a Microscope, an Appearance not altogether unlike this may be found on a Humane Tongue; without any Horny Covering like that described by *Bidloo* in these Figures, as follows.

A, That Part towards the Tip of the Tongue,
B, That towards the Root may be seen, arising from the Membrane underneath, a sort of Bodies of a Toothlike Form C C, &c. hard as Cartilages, or the Nails; for which reason (says he) I call them *Ungulae*: Betwixt these (he further adds) are placed certain forked Bodies of the same Structure: (See *Fig. 3*.) Between these Two Kinds of Bodies, and sometimes upon them, are placed certain Bladder-like *Pyriformal*, and *Pellucid Globuli*. (*Fig. 2. D*.) These *Ungulae* are framed by the manifold joyning together of *Fibrous Lamellae*. (See *Fig. 4. A*.) whose Middle B, is Medullary and Pervious; but the *Globuli* are hollow like Bladders: Both these kinds are clotted about with a strong tensile Membrane (*Fig. 2. E*.) to which they are fastned on their Sides. This Membrane is supported with Hairy *Stamina* F. like the Membrane immediatly under it, which subjacent Membrane is Perforated by the aforesaid Bodies, as appears in (*Fig. 6*.) In some of the Interstices of these Bodies there may certain Cavities G, *Fig. 2*. be discover'd; whose Bottom is very Porous. The Appearance

of the Back Part of these Bodies is represented in *Fig. 5*. A, The broken *Globuli*. B, The *Asperities* of the *Ungulae*. C, The Hairy Membranous Covering. D, The porous Apertures. The Upper Covering being remov'd, the Second or Subjacent Membrane, mention'd above, comes in view. *Fig. 6*. Spread like a Net; the Duct of whose Fibres is so intricate and various, that nothing certain can be determin'd of their Order; For in a Raw Tongue it is glutinous, in a Boy'd one extensible; its Superiour Part exprest in this Figure, is whitish and thinner; but the Lower is observ'd to be thick, and more tenacious. (See *Fig. 7*.) Its Perforations AA, *Fig. 6*. answer to the Number of the *Ungulae*: Here also may be observ'd several small Vessels B, creeping along, and running to the Superficies of the Tongue. The Edges of these Perforations are made rough by small Fibres and Vessels of their own, as well as of the broken *Ungulae*. The like Structure may be observ'd every where in the Membrane in the Inside of the Mouth, especially in the Palat. Under this Net-like Covering some Nervous Papillary *Plexus*. *Fig. 8*. A, and certain Glands B are hid; the Tops of which are inseparably joyn'd to the above nam'd Medullary Middles of the *Ungulae*: So that these *Ungulae*, like little Horns, cover those Papillary Bodies like a Membrane spread over them: These *Papillae* are tyed in several Places to the Carnous Fibres of the Tongue; of these, some are Large C; some Smaller D; some confus'd and in Heaps E; others more distant, and distinct, and of different Figures; about These are placed a great many Glands F, to which the Vessels of the Net-like Covering do adhere. The same Organs, tho' in a larger Form, do arise out of the Coverings of the Lips and Cheeks, as above.

Fig. 9.

The Musculous Structure of the Tongue.

A A, The External Order of Fibres continued according to the Length of the Tongue, (*viz.*) from its *Basis* to its Tip; between these are interspersed (B B B) divers Glandules and Lobes of Fat, B B.

C D, The Second Order of Fibres of the Tongue, which descend from the Upper Part towards its *Basis*.

E F, Other Fibres arising from the *Basis* go to the Superficies of the Tongue.

G H, Others carried from the Middle of the Tongue towards the Sides; the Tendinous Extremities of these Fibres are fastned to the Coverings of the Tongue: At the Middle of the lower Part of the Tongue, are Two distinct *Classes* of Fibres very intricately disposed, which contribute to those various Motions the Tongue is necessarily imploy'd in, whether in Speaking, Mastication, or the like.

Fig. 10.

The Structure of the Gums magnified with a Microscope.

A A, Part of the Gums.

B B, Two of the Foreteeth.

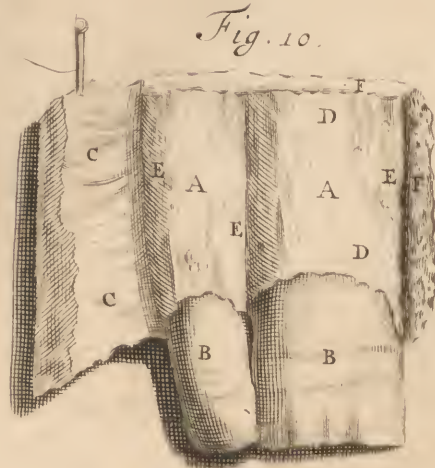
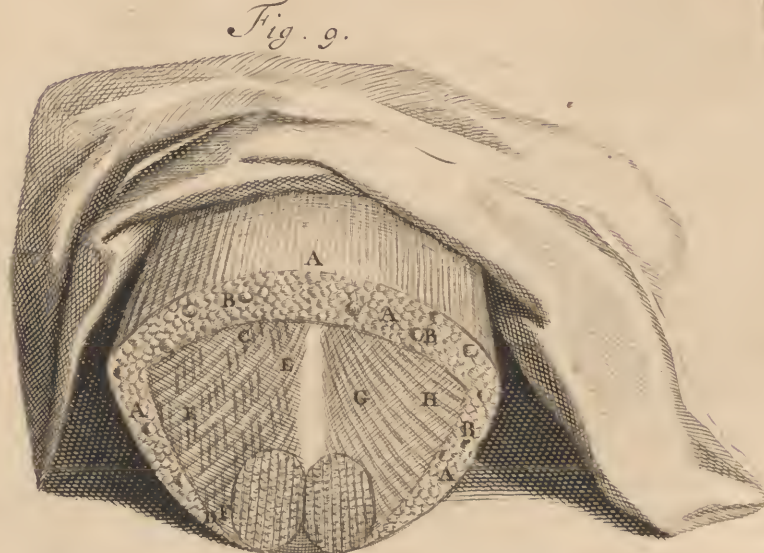
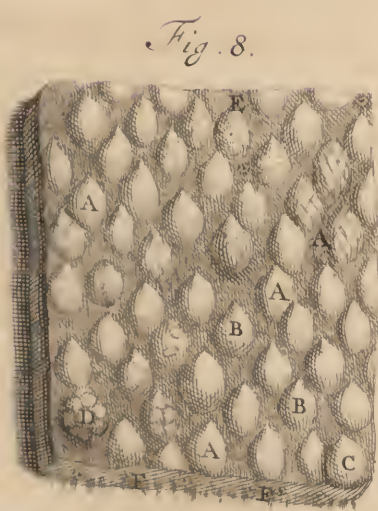
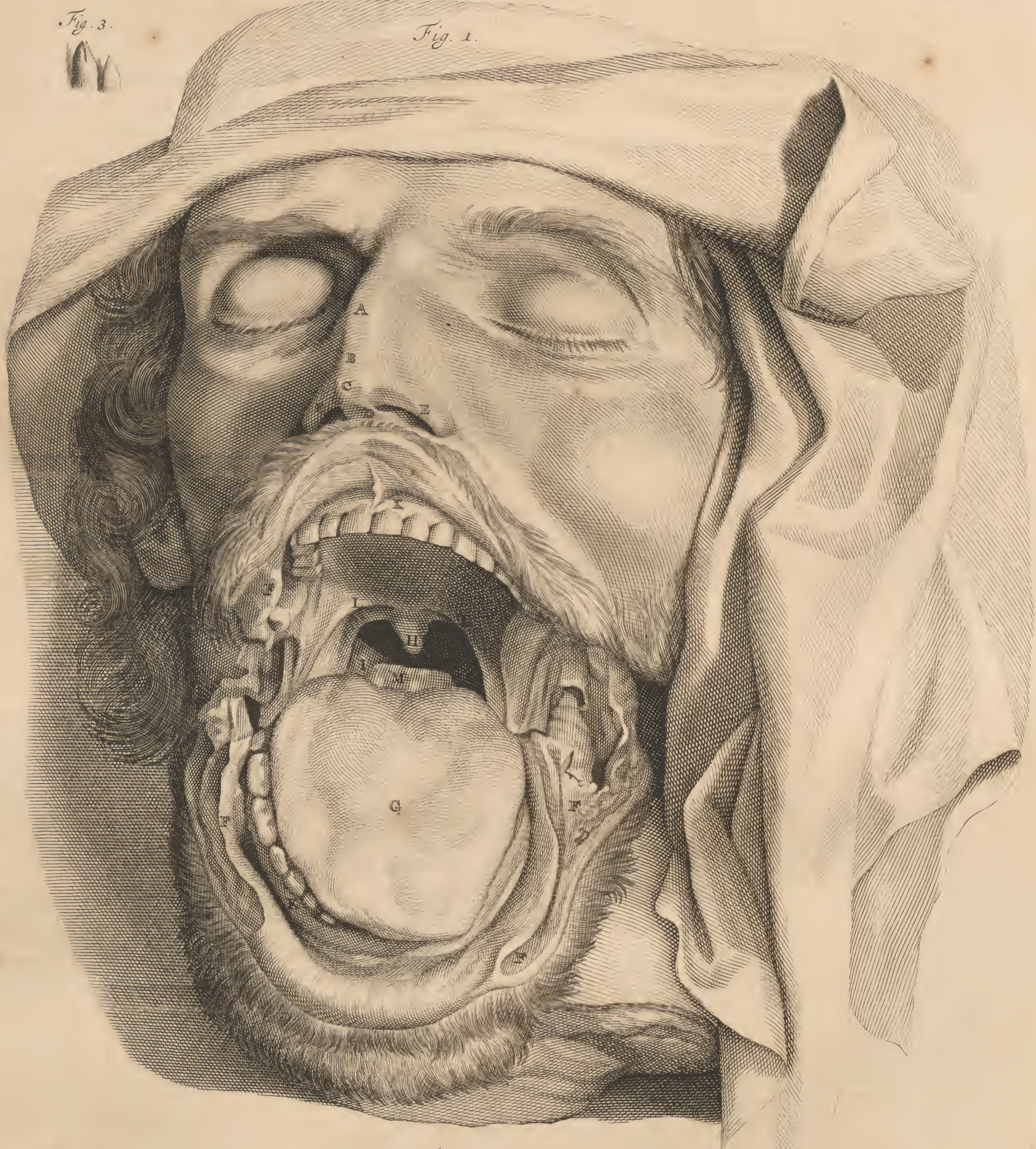
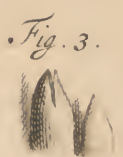
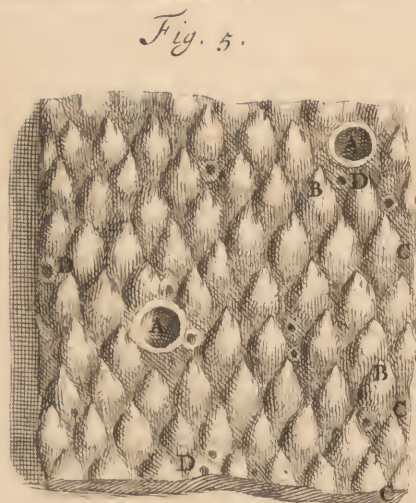
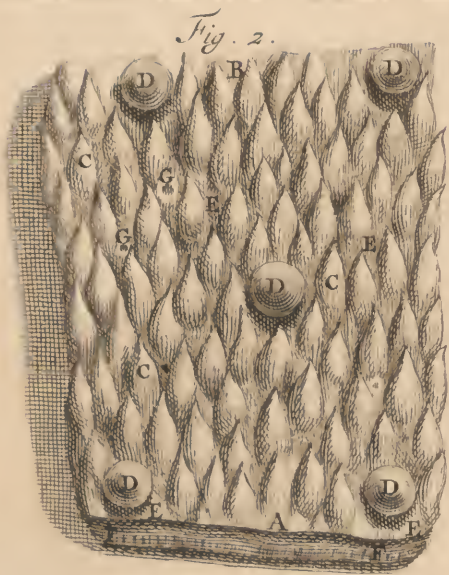
C, The Covering of the Gums opened.

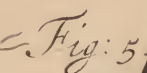
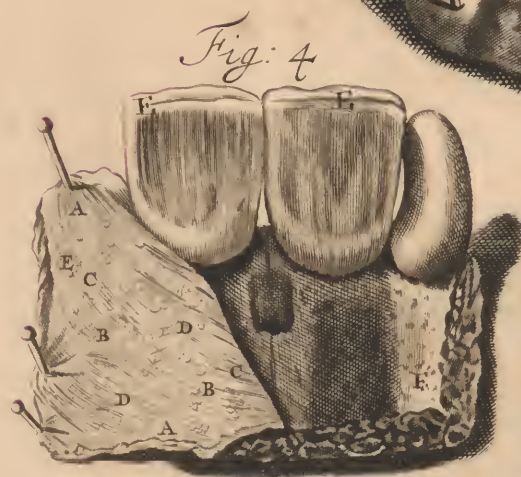
D, The Duct of the Fibres.

E, The Glands situated between the Fibres.

F, Part of the Upper Jaw broken off.

T H E





THE FOURTEENTH TABLE.

Fig. 1.



DIVERS Muscles of the Tongue, *Os Hyoides*, and *Larynx*, as they appear in their proper Situation, after the Side of the Lower-Jaw is taken off.

A A B B, The Tongue Pinn'd up B.

C, The *Musculus Styloglossus in Situ*; It arising from the *Processus Styloides* is inserted to the Root of the Tongue immediately below the Implantation of the *Ceratoglossus*; it draws the Tongue up, and inwards, in the Action of *Deglutition*.

D D, The *Musculus Ceratoglossus*, Arising Fleishy from the Horns at the *Os Hyoides*, and is so Inserted to the Tongue: If this with its Partner A C, they draw the Tongue directly into the Mouth; if One of them A C, it pulls the Tongue to one Side.

E F G I L, The *Musculus Genioglossus in Situ*; It arising from the Middle of the Internal Part of the Lower Jaw, and is Implanted at the Root of the Tongue; when this with its Partner A C, they draw the Tongue Forwards, and thrust it out of the Mouth.

H, Part of the *Fauces* contiguous to the Root of the Tongue.

K, Part of the *Musculus Sternohyoideus*.

L, Part of *Coracohyoideus*.

N. B. That L is inserted in Two different Parts of this Figure; wherefore the Reader is desired to take Notice that the Lowermost belongs to the last Reference.

M, The *Musculus Styloceratohyoideus*; Its Origin, Progress and Insertion, are so well express'd in the Figure, that there needs no other Description to be added; this Muscle, together with the *Styloglossus*, and *Stylopharyngeus*, with their Partners on the other Side, A C in Drawing up the *Os Hyoides*, *Tongue*, *Larynx*, and *Pharynx* in *Deglutition*; by which means the Aliment when fitted for Swallowing, do's not only Descend into the *Pharynx* (which is at that Time dilated;) but the *Epiglottis* is in that Position of the Tongue by consequence depress'd, and adequately Covers the *Rimula* of the *Larynx*; whereby, the least Particle of the Aliment is hindred, in its Descent into the *Larynx*, and *Aspera Arteria*; which is a wonderful Mechanism in Nature! Hence 'tis we can by no means Expire in the Action of Swallowing of the Aliment, without some Part of it Descending into the *Rimula* of the *Larynx*; which is so troublesome as to cause an incessant Coughing, till it's ejected.

N, The *Musculus Mylohyoides*, Cut from its Origination at the Internal Part of the Lower Jaw-Bone, and left at its Implantation to the Middle and Upper Part of the *Os Hyoides*.

O, The *Geniohyoides* Muscle in *Situ*.

P, The Middle Part of the Lower Jaw-Bone, which composes the Chin, broke off.

Q, The Internal Surface of the Upper Lip.

R, The Inside of the Cheek.

S, The *Gustatory* Nerve; being a Branch of the Fifth Pair of Nerves of the Brain, in its Way to the Tongue.

T, The *Motory* Nerve of the Tongue, springing from the Ninth Pair of the Brain.

U, A small Branch of the Ninth Pair going to the *Larynx*.

V, The Left Horn of the *Os Hyoides*.

W, The Trunk of the *Carotid Artery*.

XX, The *Musculus Digastricus* left to its Origination at the *Processus Mastoideus*.

Fig. 2.

Represents, according to *Bidloo*, the Salival Ducts free'd from the Inferior Maxillary Gland, express'd in *Situ*, in Fig. 1.

of the following Table M M. I cannot conceive this Figure of the Salival Ducts was design'd after the Life; nor do's it express any other Excretory Duct which occurs to my Memory; wherefore I shall here add the Description of it by *Bidloo*. A, The Twigs of the Salival Duct, above mention'd, injected with Wax, and free'd from the Glandules: B, The larger Branches: C, The Common Duct: D, It's Orifice inclos'd with an Edging. E, Part of the investing Membrane of the Mouth cut off. See the Figure of the Salival Ducts of the Lower Maxillary Glands, together with the Sublingual Glands in our *Appendix*.

Fig. 3.

The Inner Face of the Upper Jaw, and *Fauces*, after the Lower Jaw is taken off.

A, The Roof of the Mouth, or Palat.

B B, The Glandulous Membrane of the *Fauces* near the *Tonsillae*.

C C, Divers *Foramina* in the Surface of the Glandulous Membrane of the Mouth or Palat, thro' which issues a Juice separated in its Glandules, express'd Fig. 4. B, B, C, C.

D E, The Forepart of the Palat near the *Dentes Incisores*, where the Bone underneath is Perforated, to transmit divers Blood-Vessels and Nerves; but in Bulls and some Animals, in this Part, is a Perforation thro' both the Membrane of the Palat, and that of the Nostrils, and is a common Passage between their *Foramina Narium* and Mouths; which in them is call'd *Fretum*, and serves to convey Part of the Matter separated by the Glands of their Nostrils into their Mouths.

F F, A *Stylus* put thro' the Left Nostril into the *Fauces*.

G, The *Uvula* or *Gargareon* hanging down from the Palat.

H, The Glandulous Membrane which helps to compose the Back Part of the *Fauces*.

I I, Parts of the *Musculi Flexores Capitis*.

K K, Parts of the *Longi Colli*.

L L, The *Vertebrae* of the Neck.

Fig. 4.

The Inside of the Membrane of the Palat, as it appears when Rais'd, and View'd with a Microscope.

A A, The *Tunica Palatina* Rais'd from the Bone, and Pinn'd out.

B C D, The Glandules, and Carnous Fibres, which compose the Membrane.

E E, Two *Dentes Incisores*.

F, The Fourth Bone of the Upper Jaw, by some call'd *Os Palati*, whose Surface is full of *Vestigia*, where the *Tunica Palati* did Adhere.

Fig. 5.

The *Foramina Narium* Open'd, by taking off the Greater Half of the Fourth Bone of the Upper Jaw, or *Os Palati*.

A A B B, The Pituitary or Glandulous Membrane, which invests the *Foramen* of the Left Nostril, separated from the *Septum Narium* B.

C C, The Glandulous Membrane extended, so as to receive a strong (D D) Reflection of Light, by means of a *Stylus* D D, introduc'd as in Fig. 3. The Structure of this Glandulous Membrane is altogether agreeable to that of the Palat *Fauces*, &c. so that we need not say more of it in this Place; but that it is not only extended to all the tortuous Meanders of these Cavities of the Nostrils, but it also invests the Cavities of the Cheek-Bones, *Os Sphenoides*, and *Frontis*; all which communicate with the Nostrils, where they discharge their *Pituita*; as shall be demonstrated in the *Osteological* Part of this Work.

THE FIFTEENTH TABLE.

Fig. 1.



DIVERS Muscles of the Lower Jaw, and *Os Hyoides in Situ*, the Skin, and *Musculus Quadratus Colli* being Remov'd.

A B C, The *Musculus Digastricus* or *Biventer*; B, its Fleishy Origination from the *Processus Mammillaris*; C, its Middle Tendon passing thro' the *Musculus Stylohyoideus* (N), and an Annular Ligament arising from the *Os Hyoides*, to its Fleishy Termination A, in the Lower Jaw (D).

The Middle Tendon of this Digastric Muscle, and its Partner, passing thro' Two Annular Ligaments Fixt to the *Os Hyoides*, as the Ropes thro' a Double Pulley, is a necessary Contrivance in Nature to render them capable of pulling the Lower Jaw Down; which, had their Progress been direct from their Originations, they could not have perform'd; nor is there any Processes, whether of the *Vertebrae* of the Neck, or Neighbouring Parts, that could give Originations to these Muscles below their Insertions, as in some Quadrupedes: Wherefore the Divine Architect, in Humane Bodies, has plac'd this Double-Pulley below their Terminations, by which means they are made capable of performing their design'd Office. Hence *Deglutition* is Hindred, when these Muscles are in Action, they at that Time preventing the Ascent of the Tongue, and *Larynx*; neither can we in the Time of Swallowing, draw the Lower Jaw down, because the *Center of Direction* is pull'd up; wherefore we are oblig'd to keep the Jaws close in that Action. But in Dogs, and other Voracious Animals, (wherein these Muscles Arise from the Transverse Processes of the First *Vertebra* of the Neck) these Actions do not Depend upon each other; whence it is they devour their Aliment so Quick.

D, The Inferior Edge of the Lower Jaw Bone made bare.

E E, The *Musculus Mylohyoideus*, which derives its Fleishy Origin from the Internal Part of the Lower Jaw, partly under the Inferior Maxillary Glands, and partly at the Insertions of the *Musculus Digastricus*; whence Descending with a Double Order of Fibres, here elegantly Express'd, is inserted to the Superior and Forepart of the *Os Hyoides*. Immediately under this Muscle lie the *Glandulae Sublinguales*, and Salival Ducts of the Inferior and Maxillary Gland; both which are Compress'd by it, and their contain'd *Saliva* driven Forwards into the Mouth when this Muscle Acts, as in *Deglutition*, &c.

F F, The *Musculi Sternohyoidei*, Arising from the Internal and Superior Part of the *Claviculae*, and not from the *Sternum*, as it's Vulgarly suppos'd, and are inserted to the Inferior, and Forepart of the *Os Hyoides*.

G G, Parts of the *Coracohyoidei*, coming from under the *Mastoid* Muscles (H).

H H, Parts of the *Sternohyoidei*, which spring from the Superior and Internal Part of the *Sternum*, and march under the *Sternohyoidei* to their Terminations in the *Thyroide Cartilage*, as appears in the following Figure.

I I, The *Mastoides*.

K, Part of the *Masseter* on the Right Side.

L, Part of the Parotid Gland on the same Side.

MM, The *Glandula Maxilla Inferioris*.

N, That Part of the *Musculus Stylohyoideus*, that is Perforated to transmit the Middle Tendon of the *Biventral* Muscle of the Lower Jaw; which together with an Annular Ligament, springing from the *Os Hyoides*, in like manner involving the last mention'd Middle Tendon of that Muscle, do's like a Pulley render it capable of pulling the Lower Jaw down, as above Noted.

O, Part of the Internal Jugular Vein.

P, Part of the Carotid Artery.

Q, A Blood-Vessel cut off and ti'd.

Fig. 2.

Divers Muscles lying under those express'd in the former Figure.

A A A, The Lower Edge of the Inferior Jaw-Bone laid bare.

B B, The *Musculi Sternohyoidei* free'd from their Insertions, and left at their Originations.

C C C C, The *Coracohyoidei* are a Pair of Digastrick Muscles; they Arise Fleishy from the *Processus Coracoides Scapulae*, and Ascend under the *Musculi Mastoidei* where they become Tendinous, but Growing Fleishy again, are Inserted at the *Basis* of the Fore-Bone of the *Os Hyoides*; this draws the *Os Hyoides* downwards, and pulls it somewhat inwards.

D, Part of the *Musculus Stylohyoideus* at its Termination.

E E, The *Musculus Mylohyoideus*; on the Right Side not quite Free'd from its Origination; on the Left, so Rais'd, as that the *Glandula Sublingualis* W, do's Appear; this *Bidloo* calls *Geniohyoidei*.

F F, The *Geniohyoidei*, by *Bidloo* call'd *Anthereohyoidei*; they Arise Fleishy from the Internal Part of the Lower Jaw, which composes the Chin, and are Inserted to the Superior, and Forepart of the *Os Hyoides*: When these Muscles Act, the *Os Hyoides* is pull'd Upwards, and Forwards, and Assist the *Genioglossi* in Thrusting the Tongue out of the Mouth.

G G, The Digastrick Muscles of the Lower Jaw cut from their Insertions.

H H, The *Mastoides* Muscles; that of the Right Side being cut from its Origination and left at its Insertion; that of the Left remaining *in Situ*.

I, The Scutiform Cartilage of the *Larynx*, which makes what they call, the *Pomum Adami*.

K, The *Aspera Arteria* or Wind-Pipe.

L L, The *Glandulae Thyroideae*.

M, The *Musculus Masseter in Situ*.

N, The *Musculus Pterygoideus Internus in Situ*; it Arises partly Tendinous, and partly Fleishy, from the Cavity of the Winglike Process of the *Os Sphenoides*. Tab. 29. Fig. 2. K. whence it Descends to its Implantation at the Internal and Inferior Part of the Lower Jaw-Bone, opposite to the Termination of the *Masseter*: Either this, or its partner Acting, draws the Jaw to the contrary Side; if both Act, they Assist the *Musculi Temporales*, and *Masseteres*.

O, Part of the Parotid Gland.

P, The *Musculus Hyothyroideus*; it Arising from the *Os Hyoides*, is Inserted to the Lower Part of the Scutiform Cartilage; this draws the *Larynx* Upwards in an Acute Tone of the Voice.

Q, The *Cricothyroideus*. See Tab. 24. Fig. 5. H H.

R, The *Sternohyoideus* ending in the Scutiform Cartilage.

S, The Internal Jugular Vein, whose Lower Part is at some distance plac'd under that Part of the *Mastoid* Muscle, (*App. Fig. 1. 14.*) which springs from the *Clavicula*, which Part of that Muscle is most commonly Contracted in those who are said to have Wry Necks, which the Operator in that Case ought to Observe, least in too boldly Thrusting in his Knife to divide the contracted Part, he also Wounds this large Blood-Vessel, and the Flux of Blood prove Destructive to the Patient; for tho' its Flux may easily be restrain'd outwardly, yet the Vein lying in so large an Interstice, defended by the *Clavicula*, and Adjacent Muscles, the Blood will nevertheless pass out of the Vessel between the Muscles, and Neighbouring Parts. When such a Mischiefe is done, we ought to divide the External Integuments largely, and clear the Part of the Coagulated Blood, and apply a moderate Compress on the Wounded Vessel: An Instance of which Practice we had once Occasion to make in a Wound between the *Pectoral*, and *Deltoid* Muscles, immediately under the *Clavicula*, where the *Subclavian* Vein was Wounded. In such like Cases, how can those Ignorant in Anatomy, Practice without Fear and Trembling?

T, The *Carotid* Artery.

V, A large Vein proceeding from the *Thyroide* Gland to the *Ramus Subclavius*.

W, The *Glandula Sublingualis* lying immediately under the *Musculus Mylohyoideus*.

Fig. 1.



Fig. 2.





T H E SIXTEENTH TABLE.



HE External Muscles which move the Head as they appear on the Back-part; the Upper-part of the *Cucularis* being taken off, and some Muscles of the Shoulder-blade, and *Thorax*, rais'd and reclined laterally.

A A, The *Musculus Splenius in Situ*;

BB, &c. Its partly Tendinous, and partly Fleishy Origination from the Five or Six Spines of the Superior *Vertebrae* of the *Thorax*; the Lower Part of this Muscle appears in most Subjects distinct from its Superior, and is Inserted to the Transverse Processes of the Third, Fourth, and Fifth *Vertebrae* of the Neck, as is Exprest at eee.

CC, &c. The Origination of the Superior Part of the *Splenius* from the Spines of the Inferior *Vertebrae* of the Neck, DD its Fleishy Termination at the *Os Occipitis*.

EE, The *Splenius* on the Left Side raised, and reclined laterally;

eee, Its Three, sometimes Four, Tendinous Terminations inserted to as many of the Transverse Processes of the Neck: Anatomists have erred in reckoning the *Splenii* among the Proper Muscles of the Head, since they are also Implanted to the Transverse Processes of the *Vertebrae* of the Neck, wherefore they are to be esteemed as Common to the Head, and Neck, so that if either of Them Acts, it draws the Head together with the *Vertebrae* of the Neck to which it's inserted, to that Side Backwards; if they both Act, they pull the Head directly Backwards, together with those *Vertebrae* of the Neck.

FGH, &c. The *Complexus Implicatus* or *Tergeminus*, on both Sides *in Situ*; the Left being laid bare;

HH, Its partly Tendinous, and partly Fleishy Origin, from the Transverse Processes of the *Vertebrae* of the *Thorax*, which becomes still more Fleishy in its Ascent FG, and is so inserted to the *Os Occipitis II*, immediatly under the Termination of the *Splenius* DD.

ff, A Part of the *Musculus Complexus*, Inserted to the *Processus Mammiformis*, and is by *Fallopins* described as a distinct Muscle; but to avoid Confusion, and multiplying the Number of Muscles, we have hitherto look'd on it as not perfectly distinct, having in some Subjects found it inseparably join'd with the other Part of the *Complexus*.

Either of these *Complexi* Acting, draws the Head to the same Side Backwards; if they both Act, they draw it directly Backwards.

K, The *Serratus Superior Posticus*, raised.

L, The *Rhomboides* in like manner raised and reclined laterally.

M, The Upper Part of the *Longissimus Dorsi*, and *Sacrolumbalis*.

N, The *Musculus Levator Scapulae*, partly appears.



T H E SEVENTEENTH TABLE.



SEVERAL Muscles of the Head and Neck, lying under those represented in the precedent Table.

A, The *Musculus Rectus Major Posticus* Dissected from its Insertion at the *Occiput* D, on the Left Side, and hanging down from its Origination at the Double Spine of the Second *Vertebra* of the Neck:

B, The same Muscle *in Situ*, on the Right Side.

CCE, The *Rectus Minor Posticus* on the Left Side laid bare, and remaining *in Situ*; on the Right Side it is partly hid by the *Rectus Major*.

DD, The Insertions of the *Recti Minores* to the *Os Occipitis*; they derive their Originations from the Back-part of the First *Vertebra* of the Neck, and not from any Condyliform Process of that *Vertebra*, as *Bidloo* describes them; the First *Vertebra* of the Neck, not only wanting such a Process, but is constantly without any Process in that Part, as has been taken Notice of by most, if not all Anatomists.

Those *Recti Minores* pull the Head backward on the First *Vertebra* of the Neck, and from their Use may be call'd *Remuentes* or Noddors backwards, and are Antagonists to a small Pair of Muscles in the Forepart of a Right Position also; to distinguish which, from these, we call them *Recti Minores Antici*, and *Annuentes* from their Use, of which, we shall add a Figure in our *Appendix*.

FF, The *Obliqui Inferiores*; that of the Right Side remaining *in Situ*, the Left being free'd from its Insertion and remaining at its Origin: Either of them, arises from one of the Double Spinal Processes of the Second *Vertebra* of the Neck, and after an Oblique Ascent, is Inserted to the Transverse Process of the First *Vertebra*.

When either of these Inferior Oblique Muscles Acts, it draws the Transverse Process of the First *Vertebra* near the Spine of the Second, and the Head by Consequence, is mov'd to the same Side, and is very much assisted by the *Mastoides* on the contrary Side, of which in the following Table; If both Act, they conspire to hold the Head more stable.

GH, The *Obliqui Superiores*; that of the Right Side remaining *in Situ* G; the Left being cut from its Implantation at the *Os Occipitis*, and left at its Origin at the Transverse Process of the First *Vertebra* of the Neck: Tho' these Superior Oblique Muscles perform the same Office with the *Recti Majores* last treated of, when the Head is in an Erect Position in pulling it directly backwards; yet in regard it is necessary the Head should be mov'd also backwards, at the same Time it is turn'd to one Side; it is an Argument of a considerable Council of the Author of Nature, to add these and the *Recti Minores* to Act at that Time; since the *Recti Majores* are then so extended by that Rotation of the Head, that they cannot well Act.

II, An Asperity of the Bone of the *Occiput*, where the *Musculi Splenii* and *Complexi* Terminate.

KK, The Under Sides of the *Musculi Complexi*, as they appear when rais'd and reclin'd laterally, the greater Part of that of the Right Side being cut off.

L, Parts of the *Longissimus Dorsi* and *Sacrohumbales*.

MN, The *Musculus Spinalis Colli*; this arises Flethy from all the Transverse Processes of the Neck, except the First and Second; and is Inserted, after an Oblique Ascending Progress, to the Inferior Margin of the Back-part of the Second *Vertebra* of the Neck; as it is here exprest on the Right Side: This and its Partner Acting, draw the *Vertebrae* of the Neck directly backwards.

OO, The Spines of the *Vertebrae* of the Neck.

PP, The *Musculi Interspinales*; of which, in our *Appendix*.

Q, The *Elevator Scapulae*.





T H E EIGHTEENTH TABLE.



IVERS Muscles of the Head and Neck, which appear in the Forepart after the Lower-Jaw, Tongue, *Larynx*, *Aspera Arteria* and *Gula* are removed.

AA, The *Musculi Longi Colli*, which arise partly Tendinous, but chiefly Fleishy, from the Foreparts of the Five Superior *Vertebrae* of the *Thorax*, and after a Dilatation, in the Middle of their Progress to Fleishy Bellies, they are inserted, in like Manner as they begin, to the Foreparts of all the *Vertebrae* of the Neck:

These may be called *Flexores Colli* from their Use.

BB, The Three *Scaleni in Situ*: The First of these Muscles arises Fleishy from the Forepart of the Second, Third and Fourth Transverse Processes of the *Vertebrae* of the Neck, and descending obliquely forewards, becomes Tendinous at its Insertion to the First Rib, the Axillary Nerves pass between this and the following: *Scalenus Secundus*, in like manner springs from the Second, Third, Fourth and Fifth Transverse Processes of the Neck, and is inserted to the Second and sometime Third Rib. *Scalenus Tertius*, arises from the same Transverse Processes with the former; as also from the Fifth and Sixth, and is soon implanted into the First Rib.

II, The *Mastoidei*, which arises partly Tendinous and partly Fleishy from the Upper Part of the *Os Pectoris* or *Sternum*, and near Half the *Clavicula* M, with Two and sometimes Three distinct Beginnings (as in this Subject KKK) which ascend obliquely and joyn in Half their Progress; composing a somewhat round, thick, Fleishy Muscle, and marching over the Upper Part of the *Musculus Elevator Scapulae*, becomes broader again and Tendinous, at its Implantation to the Back-part of the *Processus Mammillaris*, and the adjoining Part of the *Os Occipitis*, above the Implantation of Part of the *Splenius*.

The Origin, Progress, and Insertion of this Muscle, not being duly considered, has led Anatomists into Errors concerning its Use: For if this Muscle Acts on either Side, the Mammillary Process on the same Side, is brought towards a Right Position with its Original at the *Sternum*, and the Head is turned to the Contrary Side; and this Action of it is commonly well expressed by *Painters*; but should it more and more contract, it will draw the Head to one Side forewards, as we see in Wry Necks (commonly so called) where one of these Muscles remains contracted; but if they both Act together, the Head is rather pulled back than forewards, by howmuch their Insertions are rather behind the Mammillary Processes, than upon them; which Processes are *e Diametro* opposite to the Articulation of the Head, with the First *Vertebra* of the Neck.

LL, The *Recti Interni Majores Antici*, by some called *Par Rectum Internum Colli*, says *Bidloo*; we have elsewhere called them *Flexores Capitis* from their Use: They Arise partly Fleishy, but chiefly Tendinous from the Fore-part of all the Transverse Processes of the *Vertebrae* of the Neck, except the First and Second becoming Fleishy, are Inserted to the Anterior *Appendix* of the *Os Occipitis*, before the great *Foramen* that transmits the *Medulla Oblongata*.

They are employed in Bending the Head forewards.

MM, The *Claviculae*.

O, The *Uvula*.

PP, The Bodies of the *Vertebrae* of the Neck.



THE NINETEENTH TABLE.

Fig. 1, 2.



NE of the *Mammae* or Breasts of both Sexes; some distinguish them by their Denominations, calling that of a Woman Fig. 1. *Mamma*, and that of a Man Fig. 2. *Mammilla*: We commonly call them the Breasts; but in Woman Dugs.

A A, A Portion of the Skin Rais'd and Pinn'd out, to shew its Infide.

B B, The Protuberant Parts of the Breasts of both Sexes, in which that of the Woman exceeds that of a Man.

C C, The *Papillae*, or Nipples; the Difference in the Magnitude of which, is very Conspicuous.

D D, The *Aeolae* whose Difference is here very well Express'd between the Man and the Woman, as they appear to the naked Eye.

E E, The Glandules of the *Mamma*.

F F, The *Plexus* of Blood-Vessels and Lactiferous Ducts lying between each Glandulous Protuberance.

G G, Divers *Sacculi Adiposi* lying on the last mentioned Vessels and Ducts between the Mammary Glandules.

H H, The Adipose Membrane Pinn'd out.

Fig. 3.

The *Papilla* and *Aeola* of a Woman's Breast view'd with a Microscope, and Represented Six times bigger than the Life.

A, The Head or Top of the *Papilla*.

B, Its Glandulous Membrane.

C C, The Orifices of the Lactiferous Vessels in the Top of the *Papilla*.

D D, The *Aeola*.

E, Its rough Membrane. The *Aeola* in Virgins is of a Pale Colour, and somewhat hard; in those with Child and give Suck, it is Brown; and in Old Women Blackish.

F, The Papillary Protuberances of the *Aeola*; from each of which a Hair proceeds.

G G, Some *Vestigia* of the Lactiferous Tubes in their Progress from the *Mamma* thro' the *Aeola* to the *Papilla*.

Fig. 4.

The *Papilla* of a Woman's Breast in like manner Express'd with the Assistance of a Microscope.

A A, The External Glandulous Membrane of the *Papilla*, separated and expanded.

B B, Divers Glands of the *Papilla* cleaving to its Membrane.

C C, The Lactiferous Tubes which arise from the Extremities of the Arteries within the *Mamma*, in their way to their Orifices in the Top of the *Papilla*, CC Fig. 3.

D D, The Glands of the *Papilla* whose Secretory Ducts discharge their Contents into the last mentioned Lactiferous Tubes.

To examine the *Papilla* or Nipple, the following Method may be Practis'd. Insert a Blow-Pipe into one of the largest of the Lactiferous Tubes on the Top of the Nipple C C, Fig. 3. and after making a straight Ligature on the Nipple and Blow-Pipe, you may Blow up all the Lactiferous Tubes of the *Mamma*, thro' their Communications with each other, before they approach the Nipple Figur'd by *Nuck A-denog. Curiosa*, Fig. 11. Fol. 15. All the Lactiferous Tubes of the *Mamma* being thus extended with Wind; those Parts of Them which help to compose the *Papilla* (C C;) together with their Extremities within the Glands D D, being very much extended; make a straight Ligature on the Inferior Part of the Nipple next the Breast, then cut off the Nipple from the Breast and Dry it, and afterwards by cutting it variously, you may easily examine its Structure: By these means the Nipple appears to be compos'd of a Double Series of Fibres; the one somewhat Large, the other Less; both of a Net-like Disposition, being full of Perforations of divers Forms; the like of which is not to be found in other Parts of the Body, says *Nuck* in his Tract above mention'd; to this add a vast Number of Blood-Vessels which every where adorn the *Papilla*: Hence an Account may be given how the Nipples strut out, and are so extended in Nurses, and on the contrary so Limp in those who discontinue giving Suck.

I could never discover any Valves in the Lactiferous Vessels of the *Mammae* of Women, which some describe; tho' I have made Injections of divers Liquors, and sometimes Mercury into them; the like has been done by the Accurate *Nuck*, who; with what I have frequently observ'd, also takes Notice that the Mercury so Injected passes into the Blood-Vessels of the *Mamma*, especially its Arteries. But our last nam'd Author takes Notice of divers Straitnesses in the Lactiferous Vessels, occasion'd, as He suspects, by divers fatty hard Substances compressing

Them, even to that Degree, that if their contain'd Milk becomes a little Thickned, it there stops thro' the Narrowness of the Duct, or requiring a longer Stay, it becomes so Vitiated as to Affect the Breast variously, especially with what are commonly call'd Milky Tumors; in which Case an Abscess succeeds, and the Milky Tubes break and discharge their Contents with the Pus. The Milk by these means flowing at the Ulcer, frequently proves troublesome, and hinders its Cicatrice or Closing, as it happen'd in the Case of a Patient I not long since had under my Care, who at the same Time was infected with the Itch, in whom the Milk flow'd from the Ulcer for at least Three Months; nor could I find any tolerable Abatement of the Milky Flux, notwithstanding her dry Diet, and Drinking of a Decoction of *Sarsa, China, Guaiacum*, &c. till she had taken proper Remedies for the Itch.

The Expert *Nuck* takes Notice that the Lactiferous Tubes, tho' very Capacious in the *Mamma*, yet are Straitned at their Orifices in the *Papilla*, insomuch, that a Bristle of the smallest Size will not enter them: This Contrivance, He adds, is very necessary, lest the separated Milk contain'd in the Tubes should be continually apt to run out, and that it should be only so retain'd, that the Nipple of the Mother when Suckt by the Infant may easily void it: This Structure is very evident in the Tets of Quadrupedes, especially where their pendulous Position renders this Contrivance very necessary; yet when the Lactiferous Tubes are fill'd with Milk, it is apt to run out.

Fig. 5.

The Inferior and Internal Part of the *Aeola* and *Basis* of the *Papilla* after Dissection from the *Mamma*.

A A, The Circumference of the *Aeola* next the *Mamma*.

B B, The Mammary Glands plac'd under the *Aeola*.

C C, The Lactiferous Tubes in their way to the Nipple.

The Arteries which convey Blood to the *Mamma*, are many small Branches, Springing from the Mammary and Intercostal Arteries; of these I told Six, which afforded a Flux of Blood without Pulsation in taking off a Schirrous Breast. Here I cannot omit recommending to Practitioners of Surgery the Tying of these Arteries; the doing of which is so easie, that it is hardly possible for One tolerably acquainted with the same Practice in taking off of Limbs, to be at a loss in this. The Trunks of these Arteries Arising from the Mammary and Intercostal Arteries, are very small, as they pass between the Pectoral Muscle and *Mamma*, as appears from the Blood not having any Pulsation as it flows from them when divided in Living Bodies, except the Breast which was taken off is much Tumified. You must not expect to fill them with Wax by Injecting into the *Aorta*; because you are oblig'd to raise the *Sternum* in order to Practice that Operation; whereby you cut off their Communication with the large Mammary Artery adjacent to the *Sternum*; nor do's Wax commonly pass the Intercostal Arteries so far as to reach these. The Veins of the *Mamma* are Numerous, and pass on the Outside of the *Mamma* under the Skin only, and are very Conspicuous in those who give Suck, or have had Children: These Arise, or are continued from the Extremities of the Arteries and composing many large Trunks which discharge their Blood into the Mammary and Intercostal Veins; some pass up to the Subclavian Vein. The Nerves are commonly said to Arise from the Thoracick Nerves, and pass thro' the Intercostal and Pectoral Muscles to the *Mamma*: I must confess I never yet trac'd Them, nor do's *Vienus* Figure Them; but in his XXIV. Table Expresses Two Branches U, X, Arising from the Sixth and Seventh Nerves of the Neck composing one Trunk, which descends and gives Branches to the *Musculi Serratus minor anticus, Pectoralis, Serratus major anticus*, and to the Coverings of those Muscles: From the same Nervous Stock I am apt to think may also Spring some Branches passing to the *Mamma*, whence those painful Communications between the *Mamma* and *Axilla* may proceed. Besides these Vessels the Lymph-Ducts of the *Mamma* are also mention'd; I must confess I never yet saw these Ducts Arising from the *Mamma*, yet I can't doubt of their Existence on that Part, when I reflect on what Use they are of in General, in the Animal Oeconomy, of which elsewhere. The Communication between the Lactiferous Tubes and Blood-Vessels, is demonstrated in the above mention'd Experiment, by Injecting Mercury into the Former, and its Running out again by the Later. The Opinion that the Chyle is transmitted to the *Mamma* immediately from the Thoracick Duct is now altogether Exploded, and the last mention'd Experiment seems to evince the Milk to be deriv'd immediately from the Blood within the *Mamma*. It is evident, the Milk is not Transparent like other Liquors separated from the Blood, as the *Saliva, Urine, Bile*, &c. but by a Microscope it appears compos'd of Globules not unlike those of the Blood, except that the Globules of the Blood are somewhat larger than those of Milk.



Fig. 1.



Fig. 4.



Fig. 5.

Fig. 3.



T H E
TWENTIETH TABLE.



DIVERS Muscles on the Superior and Fore-Part of the Trunk of the Body.

A, The *Musculus Subclavius in Situ*; when free'd from the Trunk of the Body and left to the *Clavicula*; (see *Tab. 66. P.*) It ariseth Flethy from the Inferior Part of Half the *Clavicula* next its Connexion to the *Spina Scapulæ*, whence its Fibres Descend Obliquely Forewards, to its partly Tendinous and partly Flethy Implantation at the Superior Part of the

First Rib next the *Sternum*.

The Office of this Subclavian Muscle is to draw up the First Rib, and consequently the rest in Inspiration.

B, Part of the *Clavicula* on the Right Side.

C, The Cartilaginous Ending of the First Rib at the *Sternum*.

DD, The *Musculus Serratus Major Anticus in Situ* on the Left Side; It ariseth Broad and Flethy from the whole *Basis Scapulæ*, *Tab. 65. GG*, and running on the *Subscapularis Tab. ib. E*, becomes broader and thicker as it passes Forewards to its Flethy Insertions at the Eight Superior Ribs Laterally *EE &c.* by divers distinct Portions by some called *Digituli*; of which, the Three Inferior, are Indented with the *Musculus Obliquus Descendens Abdominis*, as is here Exprest on the Left Side; on the Right Side the *Serratus Major Anticus EF* is raised.

G, Part of the *Obliquus Descendens* on the Left Side Indented with the last mentioned *Serratus*.

H, The *Pectoralis in Situ*, on the Left Side; this Muscle has a Broad Semicircular Flethy Beginning; above from near Half the Inferior Part of the *Clavicula B*; below from the *Os Pectoris L*, and all the Cartilaginous Endings of the Six Superior Ribs *MM*, and from the Bony Part of the Seventh Rib, it hath sometimes a distinct *Fasciculus* of Flethy Fibres which I have frequently seen Confounded with the *Obliquus Descendens*; hence it passeth Transversely over the Upper-Part of the *Biceps Cubiti*, where it is made into a short and broad strong Tendon Inserted to the Superior and External Part of the *Os Humeri*, above the Termination of the *Deltoides*.

I, The Right Pectoral Muscle rais'd, where the Decussation of its Fibres near its Insertion is well Exprest: This crossing of its Fibres is a Contrivance in Nature to render its Action more Vigorous; the Fibres of its Upper-Part Descending to the Lower-Part of its Implantation to the *Os Humeri*, and those of its Lower-Part Ascend to the Superior; crossing each other with Acute Angles. This Muscle is call'd *Adductor Humeri*; when it Acts, it moves the Arm variously according to the Operation of its several *Series* of Fibres.

K, The *Serratus Minor Anticus*, raised from its Implantation at the Bony Parts of the Second, Third, Fourth and Fifth Ribs, and left at its Origin at the *Processus Coracoides Scapulæ*.

L, The *Os Pectoris* or *Sternum*.

MM, The Cartilaginous Endings of the Superior Ribs Connexed to the *Sternum*.

NN, The *Deltoides. Vide Tab. 66. XX.*

OO, The Superior Parts of the *Recti Abdominis. Vide Tab. 32, Fig. 1. NO, &c.*

P, Part of the *Coracobrachialis. Vide Tab. 65. F.*

Q, Part of the *Biceps Cubiti. Tab. ib. 1.*

T H E T W E N T Y - F I R S T T A B L E .



HEWS the *Sternum* Rais'd, and the Principal Organs contain'd in the *Thorax* partly in View.

A, The Inner-Face of the *Sternum* or *Os Pectoris*.

BB, The Cartilages of the True Ribs, cut from the Bony Extremities of the Ribs, and left at their Connexions to the *Sternum*: Upon these Cartilages are plac'd the *Musculi Triangulares*; which Muscles Arise from the Inferior and Internal Part of the *Sternum*, and after an Oblique Progreß are inserted to the Bony Endings of the Fourth, Fifth, Sixth, and sometimes Seventh, and Eight Ribs. These Triangular Muscles scarcely appear in Macilent Subjects, as is Exprest in this Figure.

C, The *Mediastinum* free'd from the *Os Pectoris*, where, in Humane Bodies it appears Double, being a Continuation of the *Pleura* from both Sides the Internal Part of the *Thorax*; whence it Descends and firmly Cleaves to the *Pericardium*, dividing the *Thorax* into Two Cavities, and the Right Lobes of the Lungs from the Left: In this Progreß of the *Mediastinum* it parts with One of its *Laminae* to cover the large Blood-Vessels within the *Thorax*. A Triangular Interstice is fram'd immediately under the *Sternum* at the Approach of the *Pleura*, from each Side as it Descends to compose the *Mediastinum*: Nor is this Interstice an empty Space as it is commonly suppos'd, but is interwoven with various Orders of Fibres, framing *Loculi* or little Cells. *Real. Columbus* Lib. xi. Cap. iii. Proposes the letting out of *Pur*, collected in this Interstice by Perforating the *Sternum*. As the Fore-part of the *Mediastinum* plainly appears a Continuation of the *Pleura*; so its Back-part is evidently a Continuation of the same Membrane, as it advances towards the *Vertebrae* of the Back: In Dissecting a Morbid Body, I found the Right Side of the Cavity of the *Thorax* so extended with a Serous Humor, as its External Appearance, (especially at the Cartilaginous Endings of the True Ribs,) was Prominent: Nor would the least Portion of the Lungs on the same Side Swim in common Water, but Sunk to the Bottom of the Vessel: In this Subject I could not find any Part of the Hydropick or Serous Humor in the other Side of the *Thorax*; but the Lungs on that Side in no very ill State. By this, we may be assur'd that the *Mediastinum* adequately divides the Right Side of the *Thorax* from the Left. The *Mediastinum* also supports the *Pericardium*, least its Flaccidity impede the *Systole* of the Heart, and sustains the Trunks of the Nerves of the *Par Vagus* in their Progreß thro' the *Thorax*. The Diaphragm is also said to be suspended by the *Mediastinum*, least the Liver, to whose Lower-Side it's Connexed, should become Insupportable. The *Mediastinum* receives Arteries from the Mammary and Intercoastal Branches; it has Two large Veins which discharge their Blood into the Subclavian and Neighbouring Trunks: Its Nerves are said to Spring from the Eighth Pair. The Lympe-Ducts of the *Mediastinum* pass towards the *Thymus*.

DD, The *Pericardium* or *Capsula Cordis* Open'd and Pinn'd up. The *Pericardium* Arises from the large Vessels at the *Basis* of the Heart, and seems to be compos'd of a Continuation of the *Pleura* or *Mediastinum*. It adheres to the Diaphragm below, and laterally to the *Mediastinum*. It has Blood-Vessels from the Diaphragm and Mammary-Vessels, according to the Accurate *Ruyssch* in his lately publish'd Epistles: The Capillary Extremities of these Blood-Vessels are very Numerous, as will appear when Injected with Mercury. There are divers Lympe-Ducts on the *Pericardium*, which convey the *Lympha* to the Thoracick-Duct. The Glands, which are in the *Pericardium* and at the *Basis* of the Heart, which separate that Humor imploy'd in Moistening the Inside of that Membrane and Surface of the Heart, are not to be discover'd by the naked Eye in ordinary Dissections; no more than those on the Inside of the *Peritoneum* and Surface of the Intestines, which afford a Humor to Lubricate those Parts; but when either of these Parts are Diseased so that those Glands are Affected, their Existence then is Demonstrable; as appear'd in the *Pericardium* of an Infant I lately Dissected, where the Neighbouring Parts and *Pericardium* its self were Apoptumated. In the *Pericardium* of this Subject we found Two or Three Ounces of Purulent Matter in place of the Serous Humor; and the External Membrane of the Heart so loosned, as its Surface appear'd Villous; nor did any Fat appear on the *Basis* of the Heart. In an Adult Person who Died suddenly I found the *Pericardium* somewhat Thickned and no Humor contain'd in it; but in Two, or Three Places cleaving to the Heart especially near its *Basis*, and the Heart it self intirely cover'd with Fat; The Use of the *Pericardium* is to defend the Heart in its *Systole* from the Neighbouring Parts, and to contain a Humor to Moisten the External Surface of the Heart.

E, The Heart lying within the *Pericardium*.

FF, Parts of the Lungs on both Sides the *Thorax* in Situ.

G, The *Thymus* in Situ. The Magnitude of the *Thymus* varies according to the Age of the Body; in a *Fetus* Two Months after Conception it is larger in Proportion to the Bulk of the Body than in One of Five or Six Months: In a *Fetus* of Nine Months it almost fills the Interstice which the Lungs after the Birth begin to take up in the Upper-part of the *Thorax*. The *Thymus* after the Birth gradually decreases, except the Upper-part of the Cavity in the *Thorax* is Capacious enough for its Reception, as appear'd in an Anatomical Subject I lately Dissected of Thirty Years of Age, in whom the *Thymus* was very large: I must confess I never yet met with a Subject, tho' never so Old, in whom the *Thymus* was wanting. In those Bodies the *Thymus* is less than ordinary, we find the Subclavian Glands, those of the Internal Jugular Veins, and the *Glandulae Thyroidae* larger; as they lately appear'd in a Boy of about Eight Years of Age. In Women the *Thymus* and Thyroid Glands are larger than in Men, but the Subclavian Glands are less; by reason the *Claviculae* in Women are straight and shorter than those of Men; whence a much less Interstice is fram'd for entertaining those Glands. I have more than once found the Lympe-Ducts fill'd with Wax, which Arise from the *Thymus*, and empty themselves into the Upper-part of the Thoracick-Duct; by Injecting that Duct by the *Vesica Chyli*: See *App. Fig.* 12. D.

From what has been abovesaid, it appears the *Thymus* bears a Proportion to the Head; whether in the *Fetus* or in Bodies before they become Adult, which we conceive, is in order to receive a Proportionable Quantity of *Lympha*, deriv'd from thence: And as the Subclavian Glands of Women are less than those of Men; so the Thyroide Glands and *Thymus* are larger: Hence also it appears the *Thymus* is a Lymphatick Gland, and Varies its Magnitude according to the Quantity of the *Lympha*, that is necessarily transmitted thro' it from the Superior Parts; or as the Neighbouring Lymphatick Glands do more or less transmit their *Lympha* to it: Besides this common Office of the *Thymus*, whether in the *Fetus* or Adult; it has another Use which was first suggested to Me by Injecting a Liquid into the Thoracick-Duct; when finding it not only fill the Lympe-Ducts of the *Thymus*, but the *Thymus* it self was Extended with it: The like Observation, I since found, was made by the Expert Anatomist Dr. *Tyson*, some Time since; whence I conceive, the *Thymus* and its Lympe-Ducts are *Diverticula* to the Chyle, when too great a Quantity is pressing forewards towards the Subclavian Vein. I know it may be Objected that the Valves of the Lympe-Ducts oppose this contrary Course of Liquors in them; but repeated Observations convince me, that not only these Lympe-Ducts of the *Thymus*, which are large and have very few if any Valves, (as appears by their being Injected with Wax) but those of the Loins, and their Glands from whence they Arise, are frequently fill'd with Chyle, when no Compress is made on the Thoracick-Duct. Hence it is, a Milky Liquor has been commonly found in the *Thymus*, but more frequent in that of a *Fetus* than in an Adult; and that not only because the *Thymus* and its Lympe-Ducts are much larger Proportionably in the former State or *Fetus*, but the bended Position of the Thoracick-Duct of the *Fetus* in *Utero*, renders the Ascent of the Chyle by that Duct more liable to Regurgitate by the Lympe-Ducts of the *Thymus*.

HH, The Fore-part of the *Diaphragma* free'd from the Cartilaginous Endings of the Ribs, and Pinn'd up.

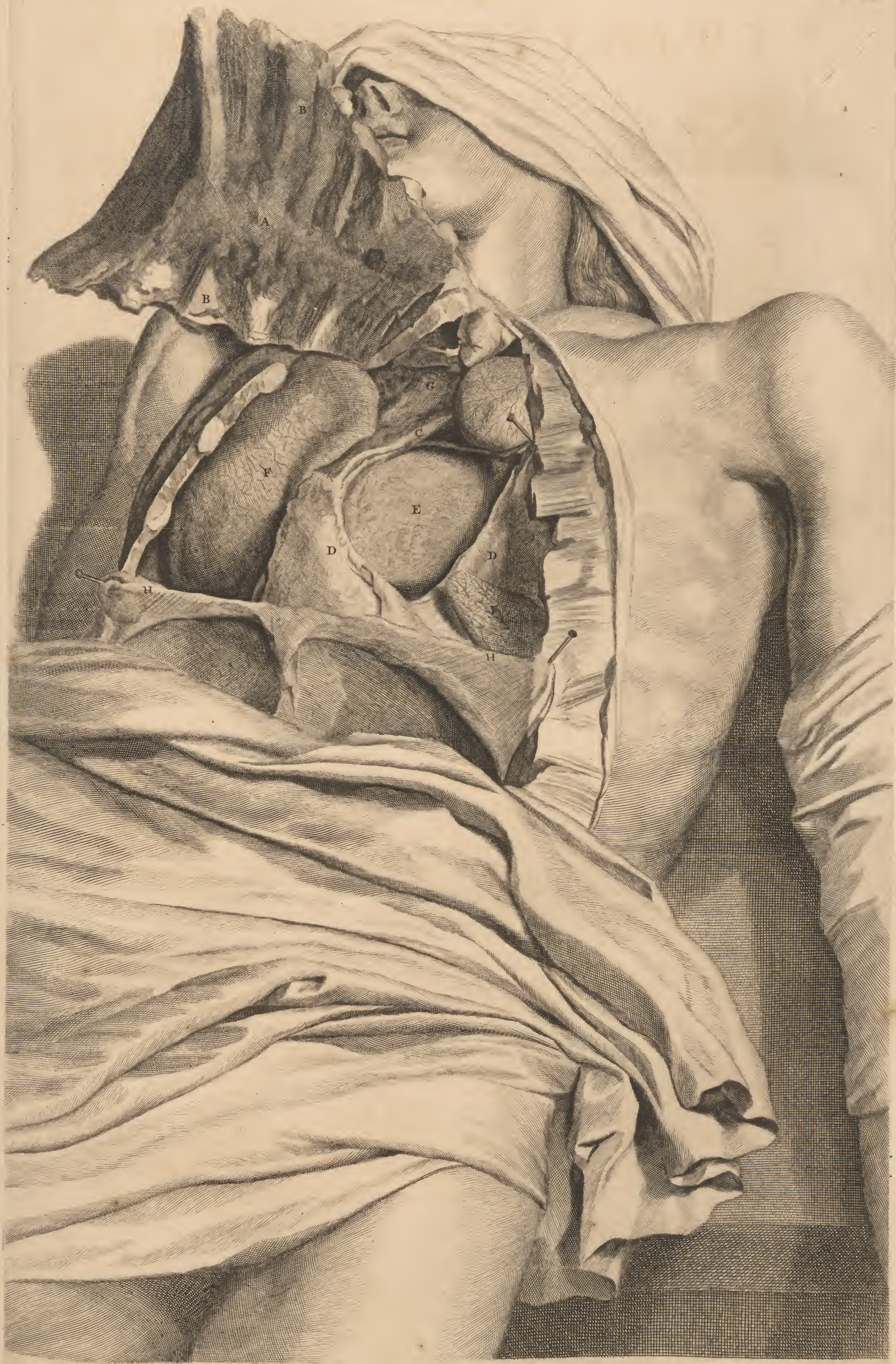


Fig. 4.

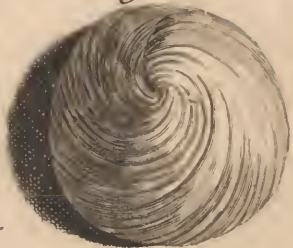


Fig. 2.

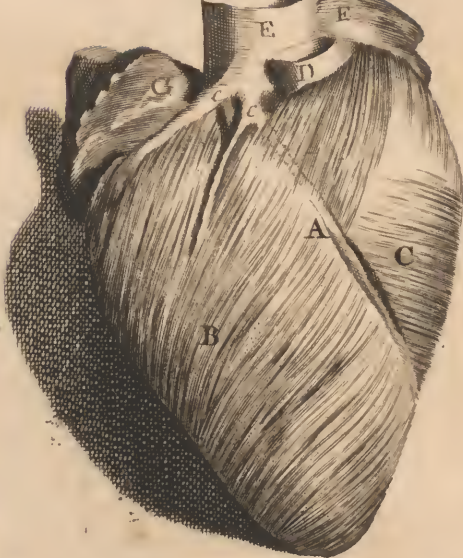


Fig. 3.

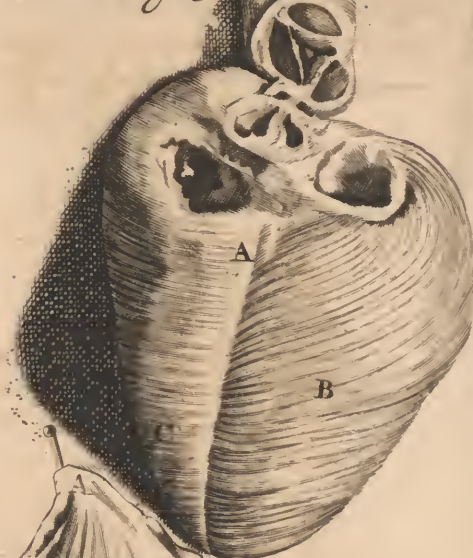


Fig. 13.



Fig. 1.

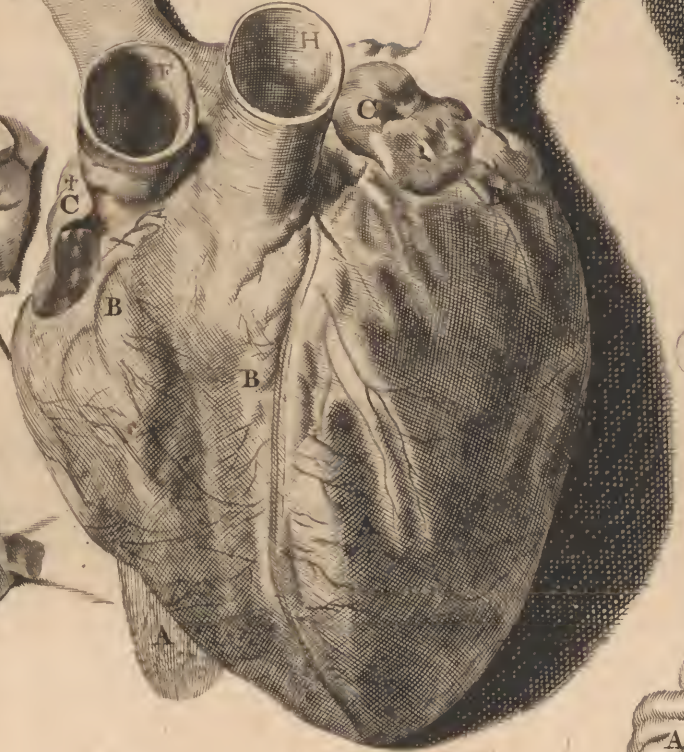


Fig. 14.

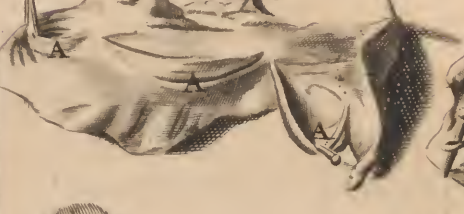


Fig. 6.



Fig. 10.



Fig. 11.

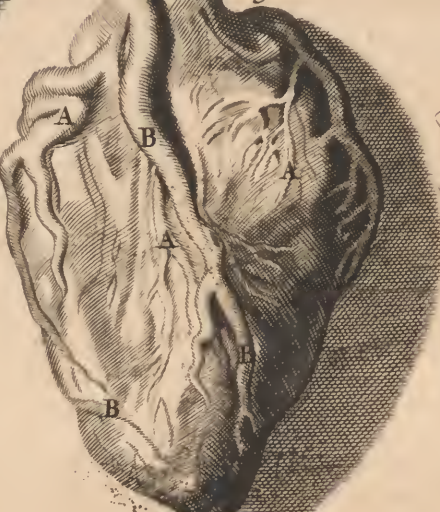


Fig. 12.



Fig. 5.



Fig. 7.

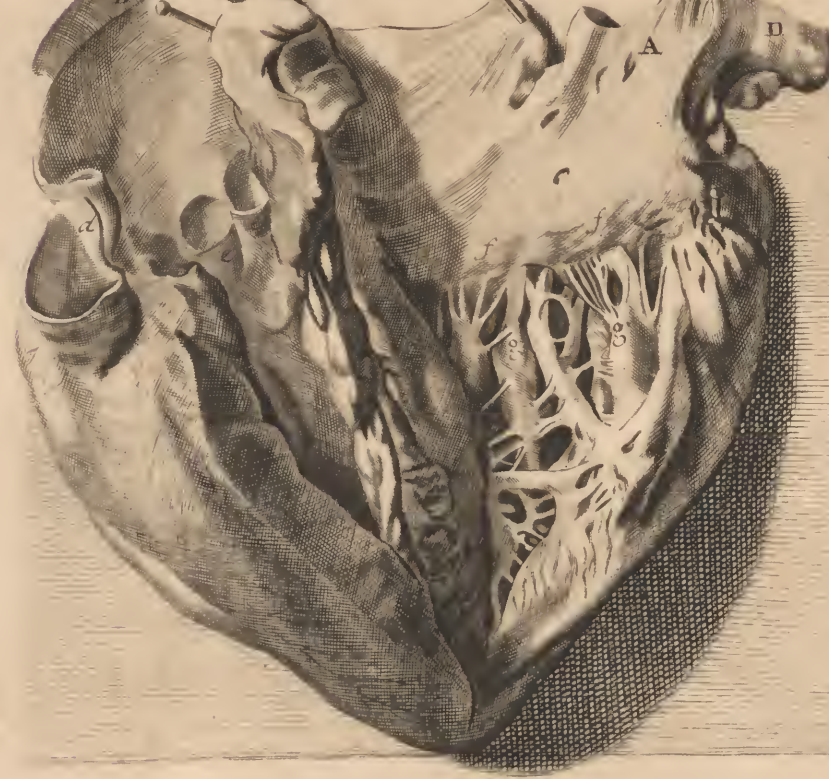
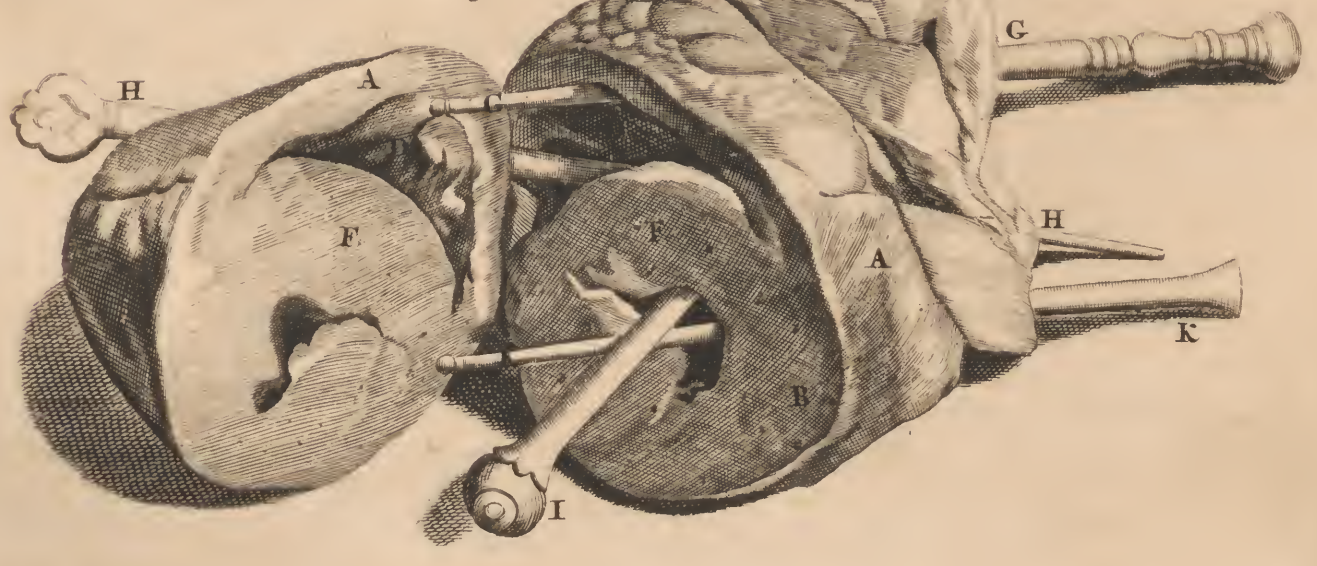


Fig. 8.



Fig. 9.



T H E TWENTY-SECOND TABLE.



Fig. 1.

THE Heart with Parts of the Trunks of the great Veins and Arteries cut off.

- AA, The proper Membrane of the Heart; a Portion of which is Rais'd and hangs Down.
- BB, The Left Side of the Heart, adorn'd with its Coronary Vessels.
- C, Part of the Right Auricle of the Heart.
- C, The Left Auricle on the *Basis* of the Heart.
- D, The Cone of the Heart.

E, The *Vena Cava* which conveys the Refluent Blood from the whole Field of the Body into the Right Auricle of the Heart, when the Heart is in *Systole*; whence the Blood is again transmitted into the Right Ventricle of the Heart when it is in *Diastole*: So that when the Auricles of the Heart are in *Diastole* or Relaxation, they are fill'd with Blood, and the Heart it self is in *Systole* or Contraction, and *Vice versa* when the Heart is in *Diastole*, the Auricles are in *Systole*.

F, The *Arteria Pulmonalis* or *Vena Arteriosa* which carries the Blood from the Right Ventricle of the Heart into the Lungs.

G, The *Vena Pulmonica* or *Arteria Venosa* which conveys the Refluent Blood from the Lungs into the Left Auricle and Ventricle of the Heart, not unlike the *Vena Cava*, &c.

H, The *Arteria Magna* Arising out of the Left Ventricle, which conveys the Mass of Blood from the Heart thro' the Field of the Body; from whose capillary Extremities the Veins are continued, as appears by a Microscope in the transparent Parts of living Animals: See App. Fig. 4. and 5.

Fig. 2.

The Heart divested of its External Membrane and Carnous Fibres after Boiling; so that the Disposition of the Subjacent Fibres may appear. The way of preparing the Heart to exhibit this Disposition of its Fibres, may be practis'd after the following Manner. The Heart with Portions of the Trunks of the large Blood-Vessels being taken off; the Blood as well within its Ventricles as Blood-Vessels being evacuated, then with Tow, or Pieces of Rags, fill the Ventricles, Auricles, and large Vessels on the *Basis* of the Heart; the Mouths of the large Blood-Vessels being stitch'd up, least their Contents should be Extruded by the Contraction of the Heart in Boiling. This done, Boil it according to its Bulk; if it is the Heart of an Ox, &c. Boil it Four or Five Hours; if of a Man, One or Two.

N.B. This Figure is Printed reverse.

A, A *Sinus* plac'd between both Ventricles, in which a large Trunk of one of the Coronary Arteries is convey'd.

B, The Cochleated or Oblique descending Order of Fibres of the Left Ventricle of the Heart.

C, The External and Oblique descending Order of Fibres of the Right Ventricle; which decussate the former or Subjacent Fibres in Acute Angles.

D, Part of the *Arteria Pulmonalis*.

E, The *Aorta*.

ee, The Trunks of the Coronary Arteries.

F, The Right Auricle.

G, The Left.

Fig. 3.

A, The *Sinus* above mention'd between the Ventricles.

B, The Tortuous Disposition of the Fibres of the Right Ventricle.

C, Those of the Left.

The Heart consists chiefly of divers *Strata* of Oblique descending Fibres; the External passing more straight or less Contorted than the Internal; whence it happens that the External Fibres are seen to Decussate the Internal with Acute Angles; the former Arising from the *Basis* of the Heart at the Roots of the Blood-Vessels, and End in the Cone; the later Arise from the same Place, and Terminate either in the *Parietes* of the Ventricles or *Columna Carneæ* Fig. 7. g g, from which divers Tendinous Filaments are continued to the Lower-parts of the Tricuspid and Mitral Valves.

D, The *Aorta* divided between its Origin from the Heart and Valves, and reclin'd to One Side, hanging by its Two Coronary Arteries; Express'd Fig. 2. e e.

ee, The Three Semilunary Valves of the *Aorta*, which hinder a Return of the Blood into the Left Ventricle, when the Heart is in *Diastole*.

Fig. 4.

The Concourse of Fibres near the Cone of the Heart, as they appear after a Transverse Section.

Fig. 5.

Some *Fasciculi* of Fibres of the Left Ventricle of the Heart.

AB, The Two Tendinous Extremities of the Oblique Flethy Fibres, Express'd Fig. 2. 3.

C, The Flethy Parts of the Fibres between the Two Tendons.

D, The Collateral Fibres which appear in dividing the last mention'd *Fasciculi*: Nor are these any other than Parts of the Fibres of the divided *Fasciculus*, and lay Parallel to each other according to their length. The Blood-Vessels and Nerves passing between these Fibres make a Reticular Appearance, when divided, as here Express'd.

Fig. 6.

The Right Auricle, and Part of the *Basis* of the Heart.

A A, The Right Auricle expanded.

BBB, The Three Tricuspid Valves; Two of which, are extended by Pinning out their Tendons, deriv'd from the *Columna Carneæ*: See Fig. 7. g g, Fig. 10. A, *Inferior*. The Office of the Auricles is to receive Part of the Refluent Blood whilst the Heart is in *Systole*, and to discharge that Blood again into the Ventricles of the Heart when it is in *Diastole*, so that the Auricles of the Heart seem as *Diverticula* to the Blood in its passing into its Ventricles; else a Repercussion of the Blood in the Veins would necessarily happen in the *Systole* of the Heart; which would prevent the regular Influx of the Blood to the Ventricles.

Fig. 7.

The Heart with its Left Ventricle Open'd.

A, The Inside of the *Vena Pulmonalis*.

B, The *Aorta* in like manner Open'd.

CC, The *Septum Cordis*, which divides the Right Ventricle from the Left.

D, The Left Auricle intire which in Humane Bodies is very little, as appears by this Figure; and the Trunk of the Pulmonick Vein very large.

d, The Trunk of the *Arteria Pulmonica* cut off.

ee, Two of the Three Semilunary Valves at the Beginning of the *Arteria Magna*; which hinder the Reflux of the Blood when the Heart is in *Diastole*; in which Action they are Express'd, Fig. 3. e e.

ff, The Two Mitral Valves in the Pulmonick Vein, which prevent the Blood repassing that Vessel when the Heart is in *Systole*.

gg, The *Carnea Columnæ* compos'd of Muscular Fibres, deriv'd from those of the Sides of the Heart, whence divers small Tendinous Filaments do Arise, and are fastned to the Inferior *Limbus* of the Mitral Valves; by which means those Valves are drawn down towards the Cone of the Heart, and prevent the Blood from passing out again that way when the Heart is in *Systole*. I know Dr. Lower in his Accurate Book *De Corde*, Supposes that these Mitral and Tricuspid Valves are Relax'd in the *Systole* of the Heart, and by their Rising up stop up the Passages of the Veins: But if the Structure of the Heart and these Parts are Attentively consider'd in a large Animal, as in an Ox, &c. it will appear reasonable to conceive that these Mitral and Tricuspid Valves are rather drawn down than suffer Extrusion upwards: nor need Nature have been at any trouble in making those Valves at the Orifices of the Veins, any otherwise than the Reverse of the Semilunary Valves of Arteries; if as the Expert Dr. Lower Supposes they are driven up and Extended like a Sail with Wind when the Heart is in *Systole*; but by fastening those Tendinous Fibres to the Lower-parts of those Tricuspid and Mitral Valves; which are of a Conical Figure, seems to me to be an Argument that they cannot suffer such Extension upwards, without letting some Part of the Blood repass them in the *Systole* of the Heart: Besides there must constantly a considerable Part of the Blood remain in the Ventricles of the Heart, if those Valves are so dispos'd in its *Systole*; which I think the Dr. himself seems no where to conceive; but on the contrary the Ventricles of the Heart are with great Strength adequately Compress'd in its *Systole*, for which End the Insides of its Ventricles are compos'd of divers Flethy Columns; between which divers *Intersticia* necessarily Result, (that are elegantly Express'd in this Figure,) by which means, the Ventricles are more exactly Clos'd in their *Systole*, than they could have been, had they been smooth.

Fig. 8.

The Heart with its Right Ventricle Open'd.

A, The Inside of the Right Auricle of the Heart as it appears when Open'd and Pinn'd out.

B, The Left Auricle Intire.

C, The Coronary Blood-Vessels of the Heart; from these, particularly from the Arteries, Spring those of the Auricles and large Blood-Vessels of the Heart; as the Accurate *Ruyssch* describes them in his *Anatomical Epistles* Pag. 15. The Nerves of the Heart Spring from the Eighth Pair and Intercostal Nerves; a particular Description of which, may be found in Dr. Lower's Book *De Corde*, and *Vicussenius Nervographia*.

D, Part of the Right Ventricle of the Heart Open'd.

E, A Portion of the *Vena Arteriosa* or *Arteria Pulmonalis* Divided and Expanded.

fff, The Three *Valvula Sigmoides* or *Semilunares*, which oppose the Return of the Blood from the Lungs, by the *Arteria Pulmonica* into the Heart, when it is in *Diastole*.

Fig. 9.

AA, The Heart cut Transversely.

B, That Part of it next its *Basis*.

C, That next its Cone.

DD, The Right Ventricle of the Heart.

E, The Left —

F, The *Septum Cordis* or the Partition between the Two Ventricles of the Heart.

GG, A *Stylus* put thro' the *Vena Cava* into the Right Ventricle of the Heart.

HH, Another passing from the same Ventricle thro' the *Arteria Pulmonalis*.

II, A *Stylus* in the Left Ventricle of the Heart passing out at the *Arteria Magna*;

KK, Another Inserted into the same Ventricle, by the *Vena Pulmonica*.

Fig. 10.

A, *Inferior*, A Portion of the *Columna Carnis* of One of the Ventricles of the Heart cut off: See Fig. 7. g g, *in Situ*.

B, The Tendinous Fibres deriv'd from the Flethy Column, and fastned to the Inferior Margin of One of the Tricuspid Valves.

AA, *Superior*, Portions of the Tricuspid Valves.

Fig. 11.

The Coronary Blood-Vessels of the Heart as they appear on its Surface when Injected, after Drying the whole Heart.

AA, The Arteries fill'd with Mercury fix'd with Tin.

BB, The Veins Extended with Wax.

Fig. 12.

A Portion of the *Vena Pulmonalis* next the *Basis* of the Heart.

AA, Parts of the Mitral Valves Pinn'd out by their Tendons.

Fig. 13.

The Inner Surface of a Portion of the *Arteria Magna* cut off at the *Basis* of the Heart when Divided and Expanded.

AAA, The Three Semilunary Valves well Express'd when Pinn'd out; One of them being cut thro' in its Middle, in dividing the Great Artery.

Fig. 14.

Represents in like manner a Portion of the *Arteria Pulmonalis*.

AA, The Three Sigmoidal or Semilunary Valves.

M

THE

T H E TWENTY-THIRD TABLE.

Fig. 1.



REPRESENTS the External Coat of a Vein viewed with a Microscope.

ABCD, The Fibres extended according to the Length of the Vessel, where may be observed the *Vasa Vasorum*.

Fig. 2.

A, The Second Coat of the Vein, called by Dr. Willis, the Valculous and Glandulous Coat.

Fig. 3.

The Third or Internal Tunick of a Vein composed of Circular Fibres.

Fig. 4.

The External Coat of an Artery consisting of a *Rete* of small Nerves (A.) Blood-Vessels, (B) and Membranous Expansions (C.) On this Membrane of the Artery divers Glandulous Bodies appear composing greater and lesser Clusters, DE, variously dispersed.

Fig. 5.

AB, The Second Coat of an Artery consisting of divers *Strata* of Fibres variously decussating each other, and joyned with the Internal or Third Coat.

Fig. 6.

ABC, The Inner and Smooth Surface of the Third or most Internal Coat of the Artery; where the *Foramina* for the Branches which arise out of it, are exprest, and its Fibres extended according to its length B, C. The great Trunks of the Arteries do evidently appear to consist of a greater Number of *Strata* of Fibres, than those of the Veins; but the farther they recede from the Heart, they are both still more and more subdivided, and their Trunks and Capillary Branches become still thinner and thinner, till their outmost Extremities consist of one single transparent Membrane; chiefly composed of such Tubes, as only convey their *Succus Nutritivus*. And this I am apt to think may serve for the Description of Blood-Vessels in general; and shall farther consider the Organization of the several Extremities of the Blood-Vessels, in speaking of their particular Offices relating to Secretion in the several Parts; wherefore at present shall only mention, that the Extremities of Veins and Arteries are continued Channels, variously contorted and not all of them of an equal Size, even in Parts which are uniform or the same. *Vid. App. Fig. 4. 5.*

After the Blood has past the Extremities of its Vessels, and is in its Return to the Heart again by the Veins; it there meets with divers Valves or Stops, which prevent the Weight of the Blood of the Inferior Parts of the Body, and the Recoiling of it in the Superior, (when any violent Motions affect the *Thorax*, as in Coughing, from pressing on the Extremities of the Vessels, and hindering its progressive Motion. That there is a Recoiling of the Blood in any extraordinary Motions of the *Thorax*, in the Jugular Veins, may be observ'd in taking Blood from thence, especially in Children. Hence it is the Valves in those Veins are necessary; lest the Blood should again repass into the Vessels of the Brain with great Violence; which is also prevented in the Contortion made in the Internal Jugular Vein, in its *Specus* in the *Basis* of the Skull. I must confess I never yet observed above Two Valves (one opposite to the other) in the largest Vein that is furnished with Valves; however Anatomists commonly mention Three, and Professor *Bidloo* tells us of Four and Five Valves, as they appear in the following Figures.

Fig. 7.

Part of a Vein extended with Wind and dried, having a double Valve or Two Valves of Semilunary Figures, placed opposite to each other.

Fig. 8.

AA, A Portion of the Jugular Vein blown up and dried; BBB, Its Three-fold Valves.

Fig. 9.

Part of a Vein with Five Valves.

Fig. 10, 11.

AA, The Portions of Veins exprest in the Two preceeding Figures lay'd open; BB, &c. Their Valves as they appear in their Infides.

Fig. 12.

The Valves as they appear in the Infides of the Veins according to *Bidloo*.

Fig. 13.

Two Valves as they appear when taken out of the Veins.

Fig. 14.

The unequal Distance of the Valves in the Veins; the *Vestigia* of the Valves being here only exprest, as they appear when the Vein is extended with Wind.

Fig. 15.

Represents (according to *Bidloo*) a System of the Arteries injected with Wax, and free'd from the Body of an Infant Six Months Old; which he tells us he has reserved: If so, it is a great Rarity indeed! For having more than once free'd the Arteries from the Body of an Infant, as well as from an Adult, and finding them far differing from this Figure, and not much disagreeing with the Descriptions and Figures of *Vesalius* and others; I cannot look on this, but as a Prodigy in Nature. Wherefore I shall here give you his Description of it, and refer you to my *Appendix. Fig. 3.* Where their common Appearance is exprest, as I now have them injected by me, and dissected from the Body of an Infant.

The *Arteria Aorta* (say's *Bidloo*) arising from the Heart, soon sends out Two small Coronary Branches. B, in the Body of the Heart. Its Trunk is divided on the *Pericardium* into the Ascendens C, and Descendens D. The First gives Branches to the Parts above the Heart, and is divided into the *Subclavii* E, from which the *Axillares* F, and Internal Mammary G, Three or Four *Intercostales* H, and *Cervicales* I, do arise. From the Axillary Artery are Branches communicated to the *Scapula* K, and to the Superior Parts of the *Thorax*. When it has got between the Muscles of the Cubit, it is divided into Two little Branches; the First of which L, goes to the Wrist, Thumb, and Fore-Finger; the other to the Three other Fingers. It divides into Two about the *Thymus*, and Forms the *Carotides* M. These ascending near the Wind-pipe after having sent several Branches to the Tongue, *Larynx* and Parts adjacent, and are divided into the External N, and Internal Branch O, the Exterior supplies the Face, Lips, partly the Ear and lower Teeth; the other Branch serves the Forehead, Temples and Neighbouring Parts.

The Inward Branch ascending straight through the *Os Sphenoides* creeps under the *Dura Mater*, and forming various *Plexus's*, in that Part within the Skull, it is cover'd with a particular Coat already describ'd; it sends out small Branches near the Optick Nerves; but the large Trunks creep back again, sometimes united and by and by separated from each other. There are small Branches convey'd to the Spinal Marrow, partly above and partly below the Heart. From the Axillaries, and ascending and descending Trunks, it derives several Branches which reflected into a Circle, creep through its Coverings and several Parts of the Head. The descending Trunk of the *Aorta* D, supply's some of the *Intercostals* 1, and the Neighbouring Muscles and Parts; there is a large Trunk 2, also sent to the Diaphragm; under the Diaphragm the Branches of the *Viscera* of the *Abdomen* are remarkable. *viz.* of the Stomach, 3. The Inferior and Superior Mesenteric Branches, 4, 5, those of the *Omentum*, or Caul, 6, of the Liver, 7, of the Kidneys 8, the Spermaties 9, and so on. About the *Os Sacrum* this Trunk is divided into Two Branches, from which others are again deriv'd to the Right Gut and *Pudenda*, some to the Hips, some to the Thighs and Legs, as well Internally, as Externally. Thus much concerning the principal Distribution of the *Aorta*.

In the next Place Professor *Bidloo* gives us the Anatomy of the Blood. In the Anatomy of the Blood Chymically performed (say's he) it is manifest there is a Water in it, which as well as it can be, is simply to be considered) a Spirit and Salts both fixt and volatile. Tho' by this Method (he very well say's) some Parts are very accurately discover'd; yet doth it exceedingly destroy the Appearances of some Figures, which ought by no means to be alter'd; wherefore he propos'd the following Figure.

Fig. 16.

A, A small Drop of Blood inclosed in a Glass Tube, and its Particles by the Help of a Microscope are represented very much magnified.

B, The Globular Bladders.

C, The little Fibres variously turned, laid, and disposed, according to *Bidloo*. I must confess I have frequently view'd the Blood in the same Manner as here Exprest with a Microscope, and have constantly observed its Appearance as here represented: Nor could I ever apprehend the Blood was furnished with Fibres (so much talk'd of) but that the Fibrous Appearance it has, (when any Blood-Vessel is open in the Mouth, or in Bleeding into warm Water and the like) is owing to a Coagulation of its *Serum*, by which Means its Globules are entangled and frame those Fibrous Bodies: The Streaked Mass represented at D, E. (according to *Bidloo*) I am apt to think proceeded from a Coagulation of the Serous Part of the Blood, by sealing the Tube Hermetically; in doing which the Glass must be heated. To this our Author adds another Way of Anatomizing the Blood, thus:

The watery whitish Liquor, which is of a different Substance, being separated from the cold coagulated Mass of Blood, and set on the Fire, thickens in a short Time; the red Part which remains, (of which the more fluid Part being frequently wash'd away with warm Water,) appears like a grumous Heap; every Particle of which resembles a Globular Bladder; of which, some are Transparent, others not. The rest of the Mass which consists of very flexible Fibres, according to *Bidloo*, and being exposed to the Air and Cold, become very tough, tensile, and seem like Net-work, owe that Appearance to a Combination of the Globules variously stratified on each other.

The Third Way (which our Author propos'd) of enquiring into the Blood, is when the Blood is separated from the *Serum* or Liquor it swims in, and put on a Piece of Paper dawl'd over with Lard, is become a little dry; after an External View of the Particles, gently with the Finger break off a little of the Mass of Blood; in which, you will presently behold little Globes of a differing Frame and Figure, little Fibres, and Streaks of the same Kind.

Fig. 15.

Fig. 1.

Fig. 4.

Fig. 10.

Fig. 2.

Fig. 5.

Fig. 8.

Fig. 7.

Fig. 9.

Fig. 11.

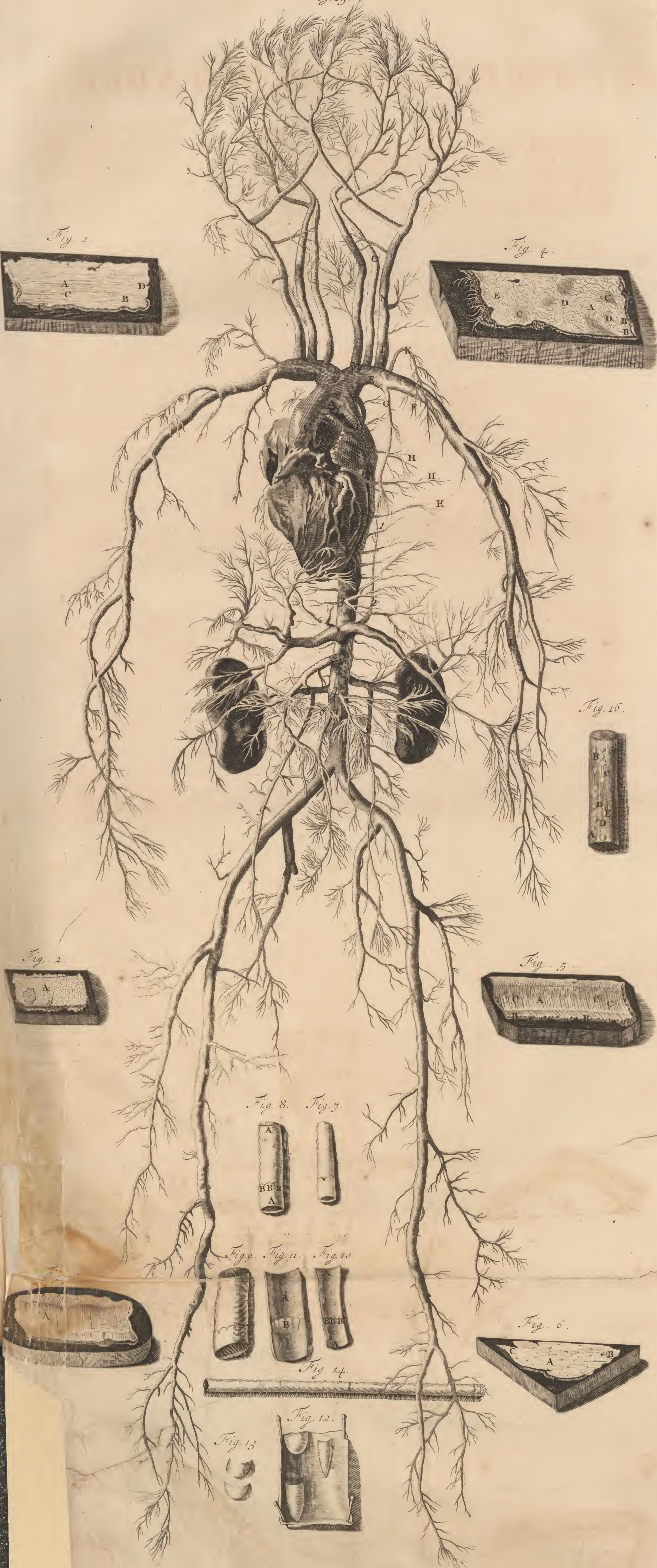
Fig. 10.

Fig. 6.

Fig. 14.

Fig. 12.

Fig. 13.



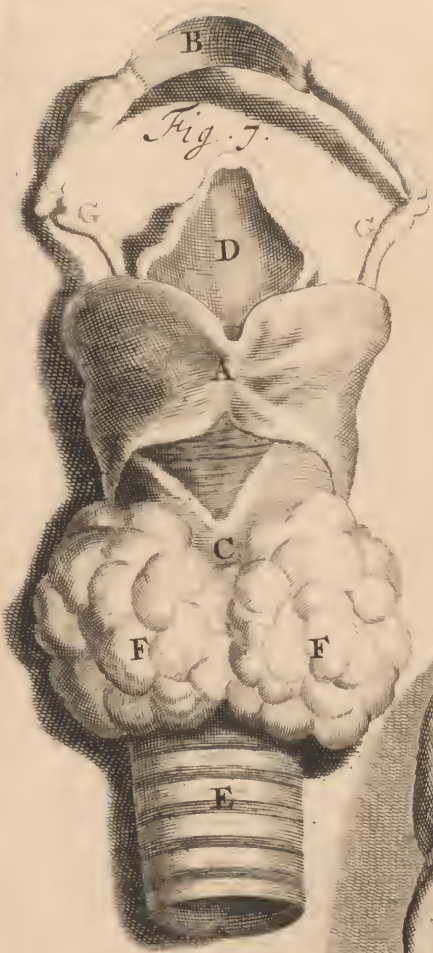


Fig. 1.



Fig. 6.



Fig. 3.

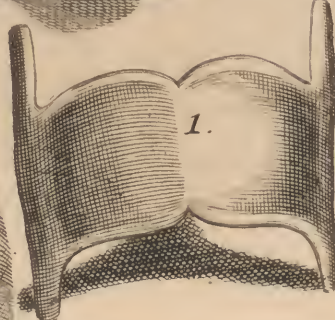
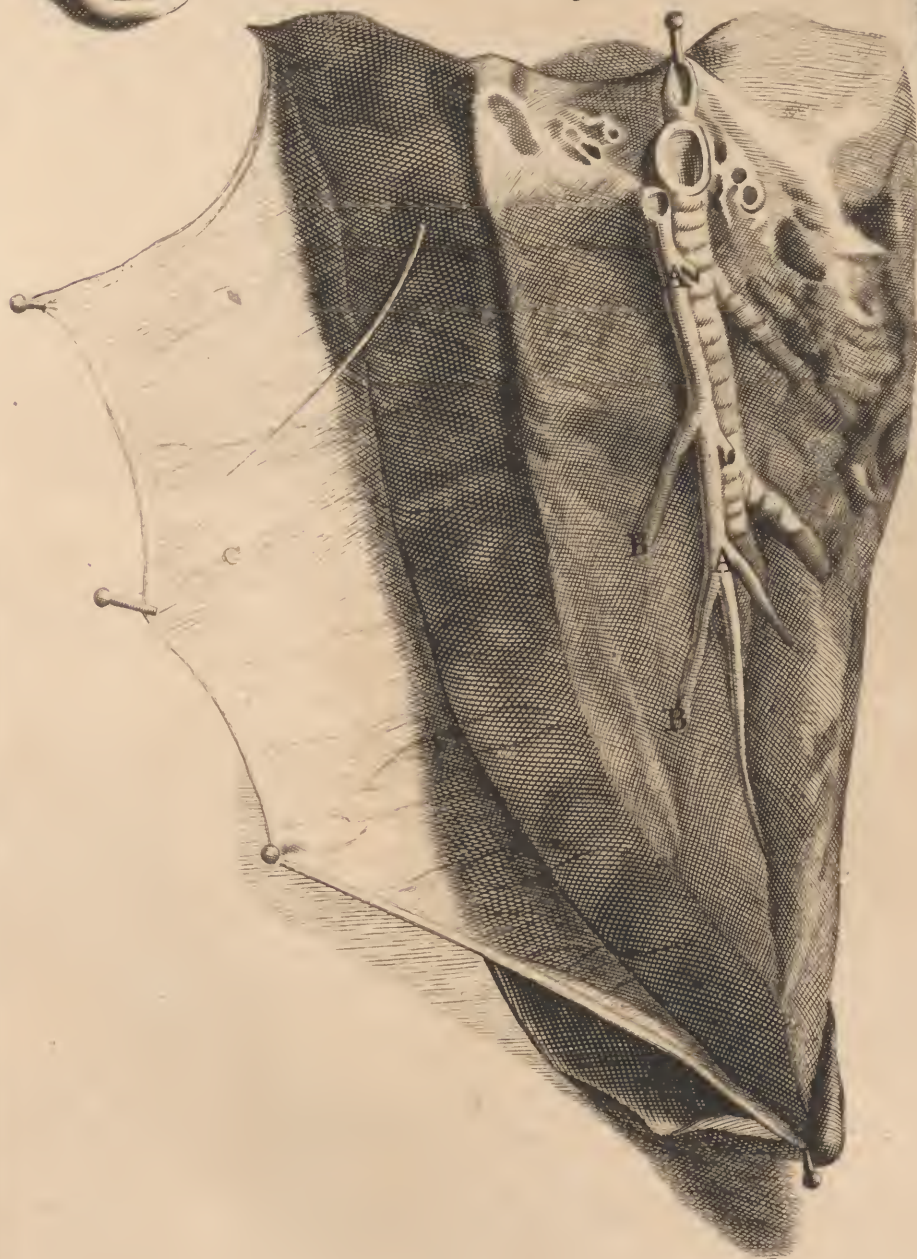


Fig. 4.



Fig. 5.

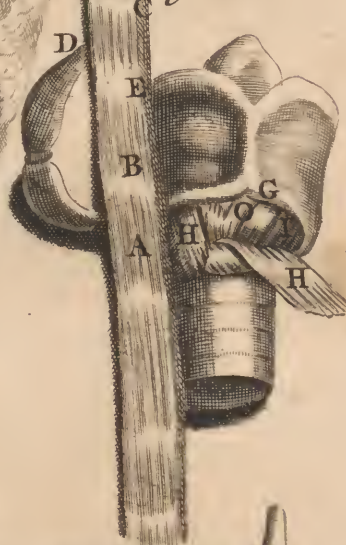


Fig. 2.



T H E TWENTY-FOURTH TABLE.

Fig. 1.

THE Fore-parts of all the *Viscera* within the Cavity of the *Thorax*, when taken out together.
A, The Heart cover'd with the *Pericardium*, and hanging to the Lungs by its Membranes and Vessels.
B B, The Descending Trunk of the *Vena Cava*, on the Right Side, and the *Aorta* on the Left.
b b b, The Ascending Branches of the *Arteria Magna*, which make the Two *Carotides* and Right Subclavian Branch.
C, Part of the *Mediastinum* cut from the *Sternum*.
D D, The Right and Left Anterior Lobes of the Lungs.
E E, The Two Posterior Lobes of the Lungs.
F, Part of the Wind-Pipe.
G G, Portions of the Nerves call'd *Par Vagum*.
H, Part of the *Gula*.

In freeing the Lungs from the Cavity of the *Thorax*, we frequently find their Outward Membrane cleaving to the *Pleura*, nor has any known Inconveniencies attended such Persons when Living. The many *Phænomena* which have occur'd to our Observation in Dissecting Morbid Bodies, in whom these Parts have been Diseas'd, are too Numerous to be insert'd in this Place; wherefore I shall only mention what I have more than once taken Notice of in examining these Parts, when they have not been Diseas'd (*viz.*) by Blowing into the Blood-Vessels, (*i.e.*) the *Vena Arteriosa* and *Arteria Venosa* those Vessels deriv'd from the *Pleura*, as well as those by *Russch* call'd *Arteria Bronchiales*, (Corresponding to which I have frequently observ'd Veins which empty themselves into the Subclavian Branches;) all which I have found to Communicate with each other upon Distension; by which we may be inform'd the Blood do's not enjoy such particular Vessels in its Circulation thro' these Parts, as some have conceiv'd; but that Part of the Blood which Arises from the Right Auricle of the Heart, may pass into the *Bronchial* Veins, as well as into the *Arteria Venosa*; and on the other Hand, the Blood Springing from the *Bronchial* Arteries, may partly pass into the Left Auricle of the Heart by the *Arteria Venosa*, as well as by its Corresponding *Bronchial* Veins before mentioned.

Fig. 2.

Part of One of the Lobes of the Lungs cut off, and a Division made according to its Length, so that a Branching of the Blood-Vessels and *Bronchus* do appear.

A A, A Branch of the Pulmonick Vein, or *Arteria Venosa*, lying on that of the *Bronchus*.
B, A Branch of the *Bronchus*.
C, The Pulmonick Artery, or *Vena Arteriosa*, cut Transversely, lying on the other Side of the *Bronchia*.

Fig. 3.

Another Lobe of the Lungs Dissected as in the preceding Figure.

A A B B, The Ramifications of the Pulmonick Artery Accompanying those of the *Bronchia*: See *Tab. 25. Fig. 10.*

C, The External Membrane of the Lungs Rais'd and Pinn'd out to shew its Blood-Vessels: These Vessels partly Arise from the Pulmonick Vessels last mention'd, and partly from the *Arteria* and *Vena Bronchiales*, as appears from what has been above Noted; and do frequently Germinate and Inosculate with the Intercoastal Veins and Arteries of the *Pleura*: The Germination and Inosculation of these Vessels I have had frequent Opportunities of observing to be in several little Parcels or *Fasciculi*, and of an Inch or Two in Length between the Lungs and *Pleura*: They very often appear in Filaments more or less Divided, and I am apt to think are frequently the Beginnings of those Adhesions of the Lungs with the *Pleura*.

Fig. 4.

A A, The *Bronchia* or Branch of the *Trachea* made bare.
B B, Part of the Lungs.

Fig. 5.

The Fore-part of the *Larynx*, and Part of the Wind-Pipe, together with the Common Muscles of the *Larynx*, &c.

A B, The *Musculus Sternothyroideus*, not well Express'd; it being here as it were continuous with the *Hyothyroideus* C E.

D, The *Os Hyoides*, or Bone of the Tongue reclin'd Laterally.

E, The Upper and Fore-part of the *Epiglottis in Situ*.

G, The Fore-part of the Scutiformal Cartilage.

H H, The *Musculi Cricothyroidei*; on the Left Side One of them

hanging down at its Beginning; the other remaining in *Situ*. These Muscles Spring from the Fore-part of the Annular Cartilage, and are soon Inserted to the Internal, and Lower Part of the Scutiformal Cartilage.

I, O, The Fore-part of the *Cartilago Annularis*, made bare.

Fig. 6.

The Back-part of the *Larynx*, and its Muscles plac'd on it; Express'd very Confus'dly; which, together with the former Figure, is Erroneously describ'd by *Bidloo*.

F F G K L, Should Express the Back-part of the *Cartilago Annularis* cover'd with the *Musculi Cricothyroidei Postici*, as it's Represented in our *Appendix*.

N N, The *Musculus Arytenoideus*.

O, The Internal and Concave Part of the *Epiglottis*, as it appears when Pinn'd up.

R, The Posterior Edge of the Scutiformal Cartilage of the Right Side.

S, The Membranous Part of the Wind-Pipe next the *Gula*.

Fig. 7.

The *Os Hyoides*, or Bone of the Tongue, together with the Fore-part of the the Cartilages which compose the *Larynx*, and Part of the *Aspera Arteria*.

A, The External and Convex Part of the *Cartilago Scutiformis*.

B, The Internal and Concave Part of the *Os Hyoides*; which Part of it necessarily comes in View in this Position.

C, The Annular Cartilage.

D, The *Epiglottis*, Express'd with the Internal Concave Part Forwards, as is truly Exhibited in the following Figure; which on the contrary, should have been here Represented with its External and Convex Part, as in *Fig. 5. F.*

E, Part of the *Aspera Arteria*, or Wind-Pipe.

F F, The *Glandulae Thyroideae*: From what I have hitherto observ'd, these Glands seem to be of the same Office with the *Thymus*: Nor do's their Colour or Compactness distinguish them from the *Thymus*; if we consider, that by their Situation on the Wind-Pipe, they are perpetually in Motion, by which the Motion of the Blood is very much hasten'd thro' them, and the Blood-Vessels consequently Enlarg'd, whence their Colour and Compactness do's Arise.

G G, Two long Processes of the Thyroide Cartilage, or *Scutiformis* ty'd to the Extremities of the *Os Hyoides*.

Fig. 8.

The *Os Hyoides* and Back part of the *Larynx*.

A, The External Convex Part of the *Os Hyoides*. This Bone of the Tongue appears in this preceding Figure, to be compos'd of Three Bones; the Middle-Bone A, is join'd to One of the Extremities of the Two Side-Bones, by a Cartilaginous Interposition call'd *Symphondrosis*; the Two other Extremities of these Side-Bones are ty'd to the Extremities of the Two long Processes of the Thyroide Cartilage G G, *Fig. 7.* by a Ligament; which Connexion is call'd *Syndesmosis*.

B, The Internal Concave-part of the *Epiglottis* next the *Glottis*.

C C, The Arytenoidal Cartilages cover'd with the *Glottis*, or Internal Membrane of the *Oesophagus*.

D, The Cricoidal Cartilage cover'd with the Internal Membrane of the *Oesophagus* which composes the *Glottis*.

E E, The Two Sides, or Back-part of the Thyroidal Cartilage, whence the *Musculus Oesophagicus* do's Arise; which Muscle in a Semi-circular Manner Invests the Back-part of the *Oesophagus*.

F F, The Back-parts of the Thyroidal Glands.

G, The Posterior-part of the Wind-Pipe where it is Membranous, and receives the Fore-part of the *Gula* in its way to the Stomach.

Having View'd the Fore and Back-parts of the whole *Larynx*, we come in the next place to Examine those Cartilages which Compose it, when Separated from each other.

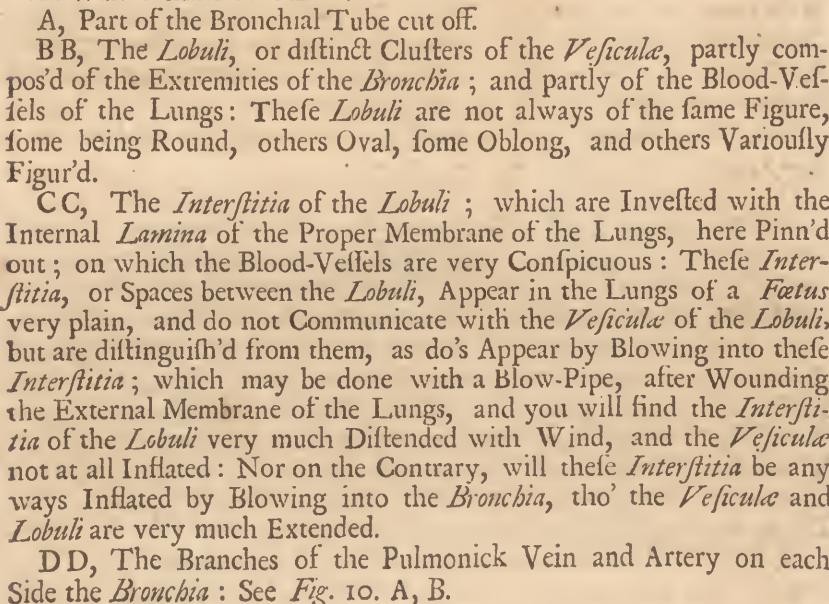
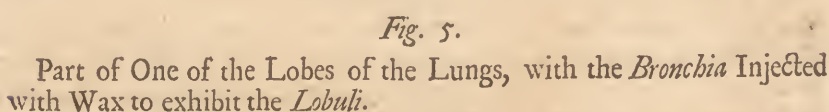
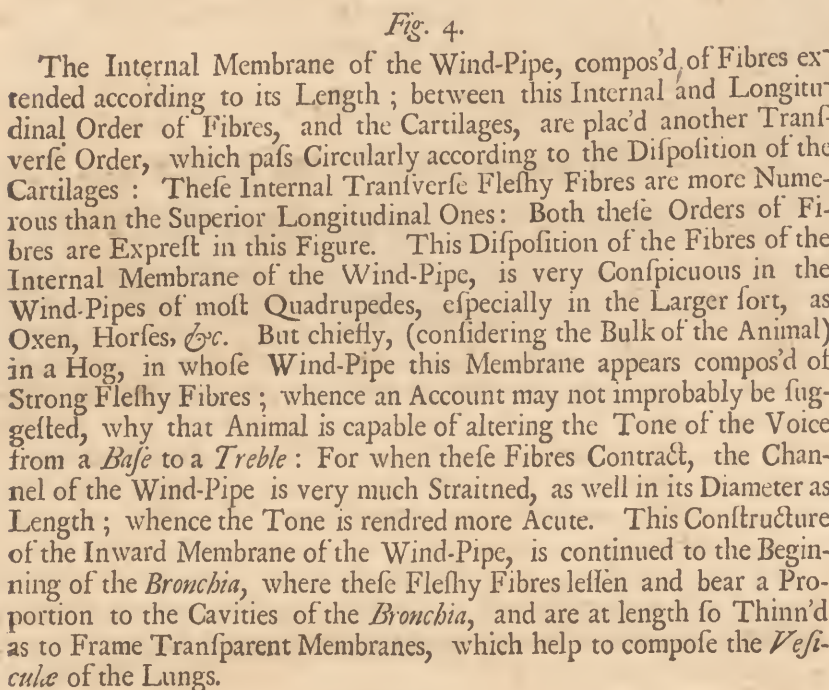
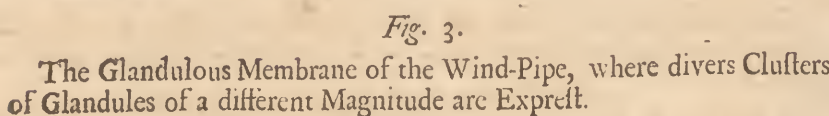
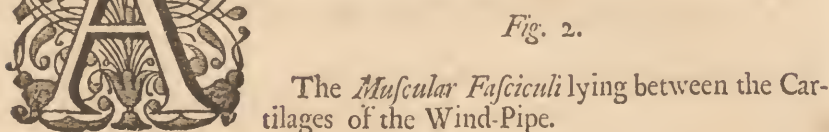
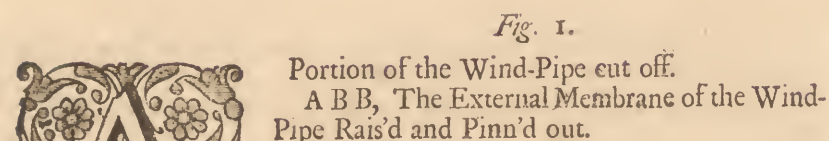
1, The External Convex-part of the Thyroidal Cartilage.

2, The Internal Concave-part of the same Cartilage: In these Two Figures, the Two Kinds of Processes of the Thyroidal Cartilage are Remarkable; the Two Superior or long Processes are join'd with the Extremities of the *Os Hyoides* G G, *Fig. 7.* the Two Inferior are fastned to the Cricoidal Cartilage Laterally.

3, 4, The Cricoidal Cartilage; 3, the Fore-part; 4, the Back-part of this Cartilage: That Figure of the Right Hand (towards the Figure of the Lungs and Heart) Expresses the External, Inferior, and Back-part of the Annular Cartilage; That of the Left Hand, Represents the Inferior, Internal, and Fore-part of the Annular Cartilage.

5, 6, 5, 6, Two different Views of the Arytenoidal Cartilages, which are Articulated to the Superior Part of the Cricoidal Cartilage.

T H E T W E N T Y - F I F T H T A B L E .



Morbid Bodies) yet nevertheless the Circulation of the Blood has been still carried on for some time. Tho' in this Case Respiration must not only be very Quick and Attended with no small Difficulty on frequent Occasions; but the Heart must also Labour very much to drive the Blood on.

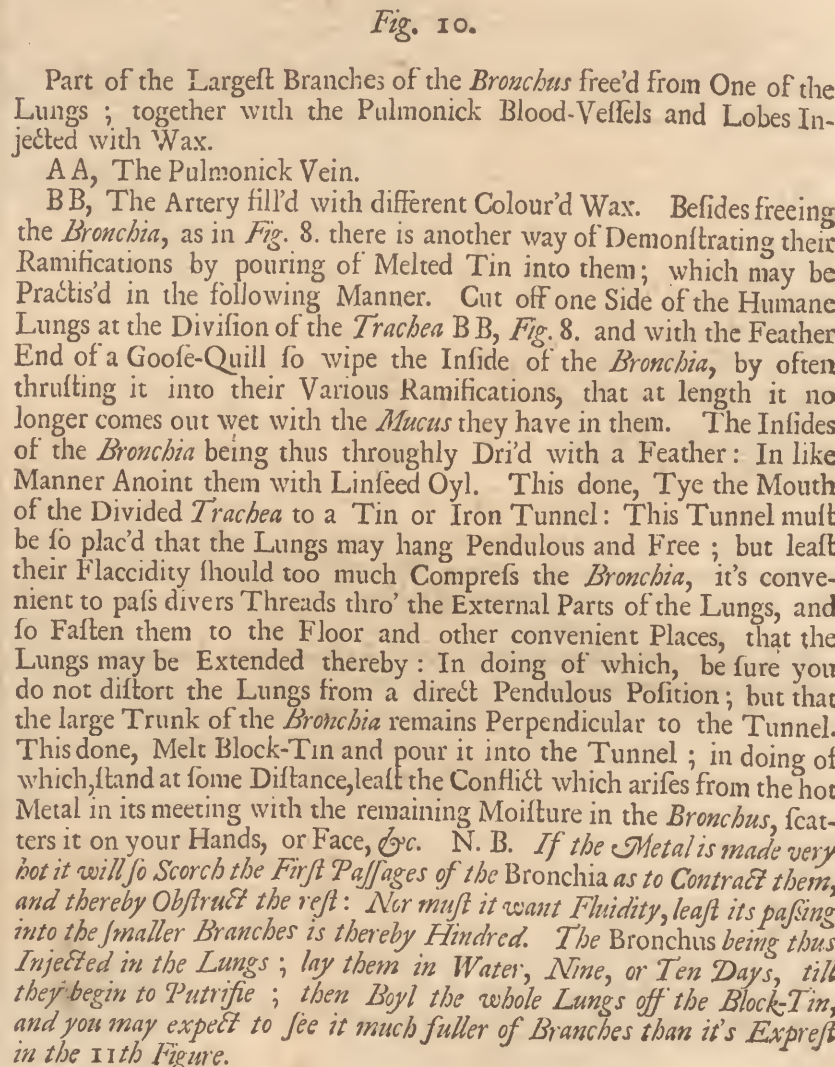
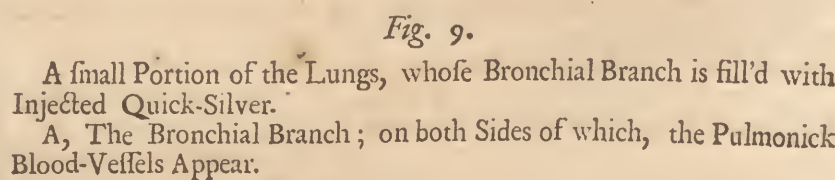
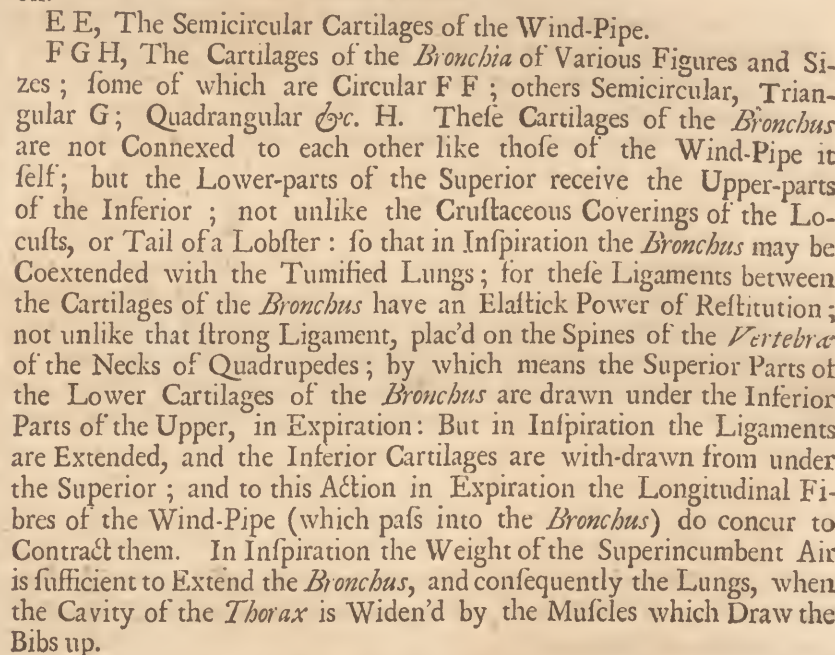
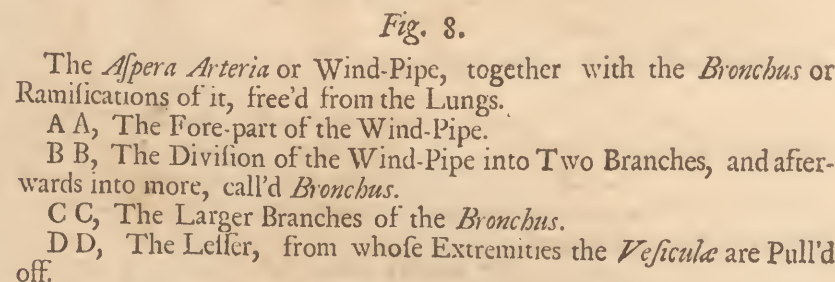
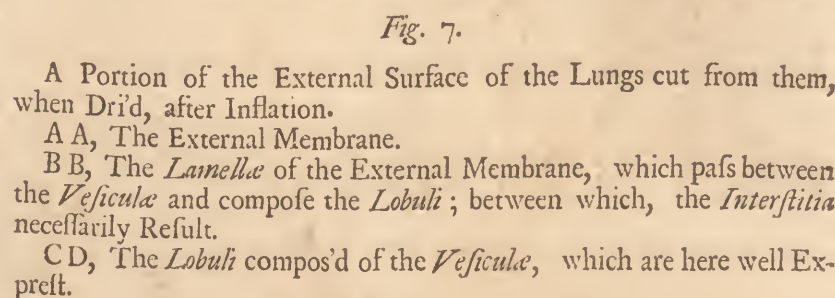




Fig. 1.

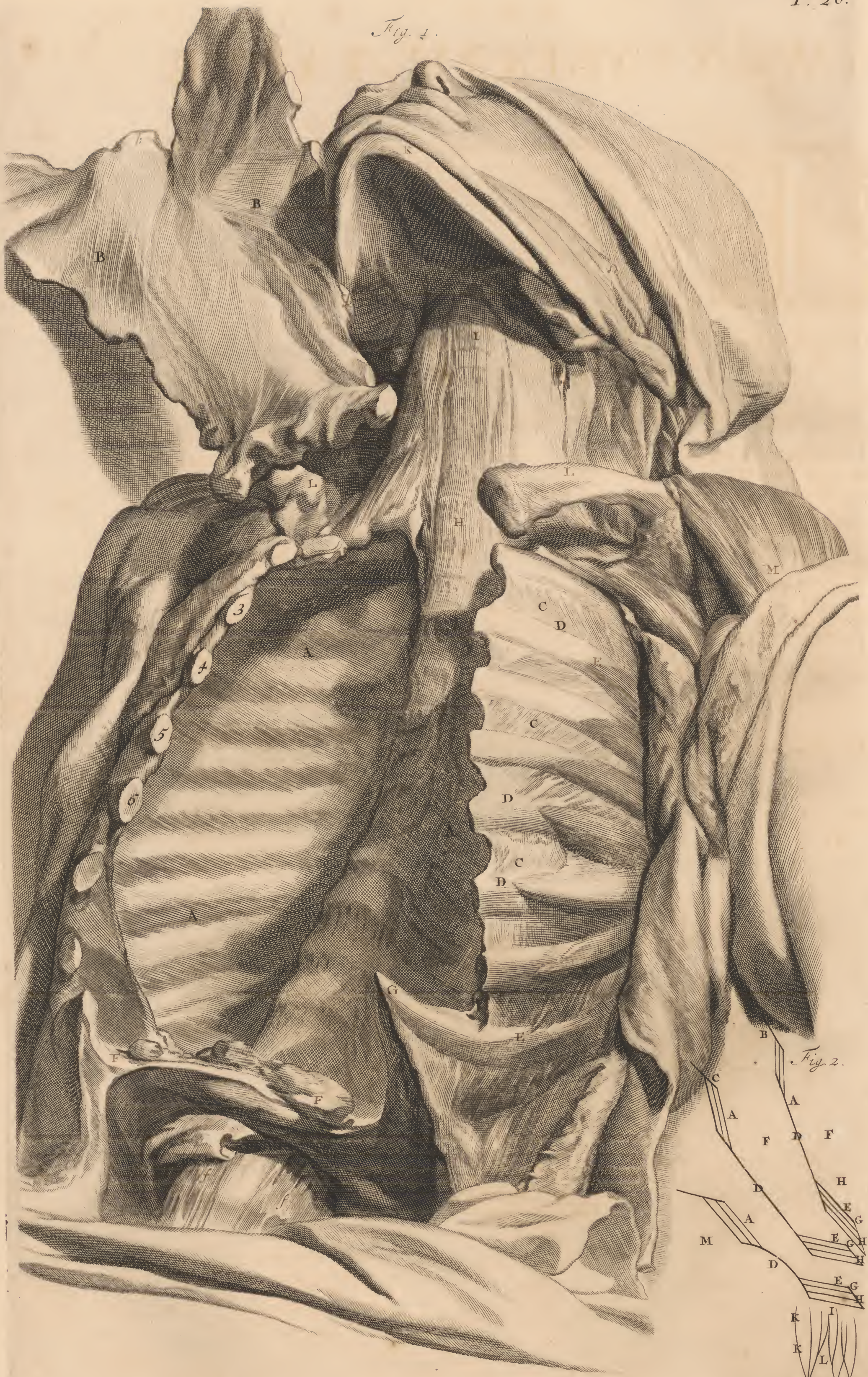
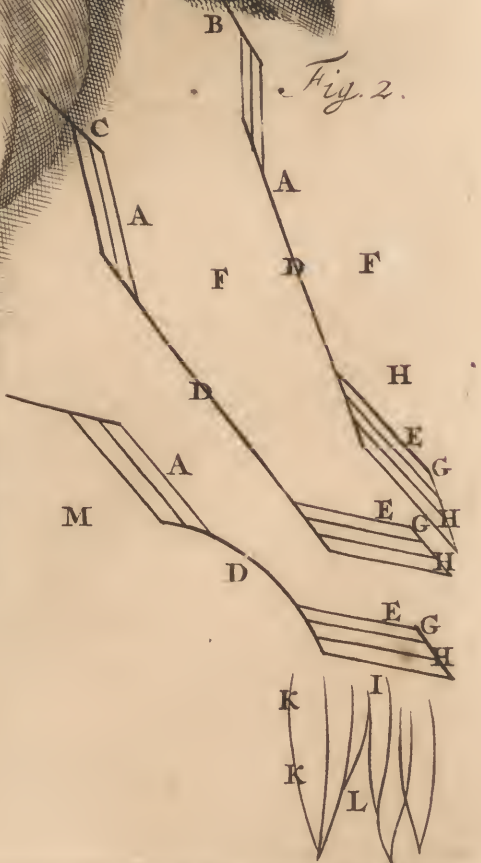


Fig. 2.



T H E TWENTY-SIXTH TABLE.

Fig. 1.



HE upper Part of the Body lying in a Supine Posture, with the *Os Pectoris* or *Sternum* rais'd, together with the Cartilages of the Ribs which are connexed to it ; so that the Cavity of the *Thorax* after its *Viscera* are remov'd, comes in view.

A A A, The Cavity of the *Thorax* invested with the *Pleura*, whose smooth Surface towards the Lungs, is here seen.

B B, The *Musculi Triangulares* as they Arise from the Inferior and Internal Part of the *Sternum*, and Ascend to their Insertions at the Bony Endings of the Fourth, Fifth, and Sixth Ribs : In this View of the Internal Part of the *Sternum*, the Mammary Blood-Vessels on each Side of it are

conspicuous : The Cartilaginous Endings of the Two First Ribs are also remarkable, being somewhat longer than the rest.

b, The Ensiiformal Cartilage.

CD, Superior) The Course of the Fibres of the Internal Intercoastal Muscles which appear thro' the *Pleura* A A.

CD, Inferior) The External Intercoastal Muscles whose Fibres decussate the Internal like the Letter X.

These Intercoastal Muscles arise from the Lower Edge of each Superior Rib, and are Inserted to the Upper Edge of each Inferior one : They are employ'd in bringing the Ribs nearer each other, to Enlarge the Cavity of the *Thorax* in Inspiration.

DD, &c, The Seven Superior or True Ribs.

EE, The Saw-like Endings of the *Serratus Major Anticus*.

FF, The Diaphragm free'd from the Cartilaginous Endings of the Ribs and Ensiiformal Cartilage, b.

ff, The *Musculi Psoii* partly in view.

G, The Cartilage of One of the Bastard-Ribs which is not joyned to the *Sternum*.

HH, The Bodies of the *Vertebrae* of the *Thorax*.

I, The *Vertebrae* of the Neck.

K, The Lower Jaw-Bone made bare.

k, The *Musculus Pterigoidens Internus in Situ*.

LL, The *Claviculae*.

M, Part of the *Deltoides* Muscle.

3, 4, 5, 6, The Bony Endings of the Third, Fourth, Fifth and Sixth Ribs, cut from the Cartilages which are fastened to the *Sternum*.

Fig. 2.

See *Tab. 52.*



T H E

TWENTY-SEVENTH TABLE.



HE Skin, Fat, and Membranes being removed, the Muscles appear on the Back as follows.

AA, BB, } The *Musculus Cucularis* or *Trapezius* on both
C, DD, E, } Sides *in Situ*:
FF, G, H, }

Either of these arises Flefhy from the *Os Occipitis*, and Tendinous from the *Ligamentum Colli* and Points of the Spines of the Three Lowest *Vertebrae* of the Neck, and Eight Superior of the *Thorax*; from which broad Origination becoming thick and Flefhy AADDF, is so inserted to the *Claviculae* E and Tendinous HF to the *Spina Scapulae* I. These move the *Scapulae* variously according to their Directions of Fibres, as Upwards, Backwards, and Downwards.

I, Part of the *Spina Scapulae*.

K OO, The *Latissimus Dorsi* or *Aniscalptor*: A thin, broad Tendinous Origination of This is deriv'd from the Spines of the Seven Inferior *Vertebrae* of the *Thorax*, and all the *Vertebrae* of the Loins, and Superior of the *Os Sacrum*; as also from the Posterior Part of the Spine of the *Os Ilium* R, and begins to grow Flefhy as it marches over the *Longissimus Dorsi* and *Sacrolumbus*, K. and in its Ascent over the Ribs laterally, it has divers *Fasciculi* of Flefhy Fibres arising from thence and joining with it, becomes still thicker, more Flefhy, and narrower, marching over the lowest Angle of the *Scapulae*; whence sometimes a Flefhy Portion of this Muscle do's arise, which we have commonly found in those Bodies in whom the *Teres Minor* was wanting, as it was in this Subject, and is at Length Inserted with a short flat strong Tendon to the *Os Humeri*, at the Implantation of the *Teres Major*: Its Use is to draw the Arm Downwards and Backwards.

LL, Parts of the *Obliqui Descendentes Abdominis*.

M, Part of the *Deltoides* on the Left Side.

N, The *Infraspinalis* on the Right Side.

OO, The *Sacrolumbalis* lying under the Tendon of the *Latissimus Dorsi* on the Right Side.

P, The *Basis* of the Right *Scapula*.

QQ, The *Rotundi Majores*.

R, The Spine of the *Os Ilium*.

S, Part of the *Glutæus Magnus*.







T H E TWENTY-EIGHTH TABLE.



THE Muscles of the Back lying under those Represented in the preceding Table.

A B C D, The *Rhomboides in Situ*, It arises Tendinous from the Spines of the Two Inferior *Vertebrae* of the Neck, and Three or Four of the Superior of the *Thorax* C; growing Fleishy in its Oblique Descent, it is inserted to the *Basis* of the *Scapula* D: It draws the *Scapula* Upwards and Backwards.

E, The *Rhomboides* on the Right Side, remaining at its Origin at the *Basis* of the *Scapula*.

F, A Portion of the *Rhomboides* which we frequently find distinct.

G, Part of the *Elevator Scapulae* or *Musculus Patientiae*: This Muscle has divers separate Originations from the Second, Third, Fourth and Fifth Transverse Processes of the *Vertebrae* of the Neck composing a large Fleishy Muscle, which is Inserted to the Superior Angle of the *Scapula*.

H, That Part of the *Basis Scapulae* towards its Superior Angle.

I, The *Serratus Superior Posticus* Arising thin and Tendinous from the Spines of the Two Inferior *Vertebrae* of the Neck, and Two Superior of the *Thorax*; and after an Oblique Descent over the Inferior Part of the *Splenius Capitis* and Upper Parts of the *Longissimus Dorsi* and *Sacro-lumbalis*, becomes Fleishy, marching under the *Scapula* to its Insertions at the Second, Third, and Fourth Ribs. This Muscle assists in drawing the Ribs Upwards in Inspiration.

K, The *Serratus Inferior Posticus*: The Origination of this Muscle is much larger than this Figure seems to represent. I have frequently taken Notice of a Series of Tendinous Fibres continued between the *Serratus Superior* and this Muscle; and its Lower Part in like Manner continued to the Spine of the *Os Ilium*, strictly embracing the *Sacro-lumbus* and *Dorsi Longissimus*; in which it performs the Office of a Bandage as shall be hereafter mentioned. These Inferior Saw-Muscles, in this Figure, are free'd from their Originations at the Spines of the *Vertebrae* of the *Thorax* and Loins, in raising the *Latissimi Dorsi*, Express'd in the preceding Table K L O O, whose Tendinous Originations in most Subjects, do inseparably cleave to these *Serrati* near the Spines: This Figure demonstrating the Progress and Insertion of these Muscles, I shall only add; their Use is to draw the Ribs Downwards, and Contract the *Thorax* in Expiration.

L, Part of the *Cucullaris* left at its Insertion to the *Clavicula*.

M, The *Latissimus Dorsi* rais'd and left hanging at its Insertion on the Right Side; the like is done on the Left, but not Letter'd.

N O P Q; The *Longissimi Dorsi*: This Muscle and its Companion the *Sacro-lumbalis* are inseparable at their Origination from the Spine of the *Os Ilium*, Superior Part of the *Sacrum*, and all the Spines of the *Vertebrae* of the Loins; Externally it is Tendinous; Internally Fleishy; in its Ascent it bestows divers Insertions on the Transverse Processes of the *Vertebrae* of the Loins; but proceeding farther, it continues to derive Tendinous Originations from the Spines of the lower *Vertebrae* of the *Thorax*, which in their Progress become Fleishy Fibres, and Terminate in the Fifth, Sixth and Seventh Spines of the *Thorax*; and this Part of this Muscle *Bidloo* calls *Semispinatus*: The other larger Part of it, in its Ascent on the *Thorax*, divides it self after the Manner of a Palm-branch, into many Fleishy Portions which become Tendinous at their Insertions to the Transverse Processes of each *Vertebra* of the *Thorax*, and Tubercle of the Ribs, and some of the Transverse Processes of the *Vertebrae* of the Neck; This Muscle is not only employ'd in keeping the Trunk of the Body Erect and Bending it Backwards; but in Progression, it has also a considerable Office; for when either Leg is mov'd Forewards, this Muscle on the same Side, near its Origin, may be observed to be in Action; which we suppose is necessary to render the *Os Ilium* at that Time stable, to the End the Thigh-Bone may be more commodiously moved in its *Acetabulum* of the *Coxendix*.

R, The *Sacro-lumbalis* which we shall describe hereafter.

S, Part of the *Glutæus Magnus*.

S, The Spine of the *Os Ilium*.

T, The *Splenius Capitis*.

V, The *Deltoides*.

W, The *Infra-spinatus*.

X, The *Teres Major*.

Y, Part of the *Spina Scapulae*, above which, Part of the *Supra-spinatus* may be seen.

Z, Part of the *Serratus Major Anticus*.

ψ, The Seventh Rib made bare.

T H E TWENTY-NINTH TABLE.



DIVERS Muscles imploy'd in moving the Back, *Thorax* and Arms.

ABDE, The *Musculus Sacrolumbalis*: Its Origin is already describ'd in the preceding Table with the *Dorsi Longissimus*, they arising inseparably: At their parting below the last Rib, the Fleishy Part of the *Sacrolumbus* is divided into divers Parts, which become so many distinct Tendons and Terminate on the Ribs, as may be seen on the Left Side of this Figure: Besides these Fleishy and Tendinous Productions of this Sacrolumbal Muscle; it has another Order of Tendinous and Fleishy Fibres which may be esteemed as so many distinct Muscles; They arising partly Tendinous and partly Fleishy from the Transverse Processes of the Loins, and Posterior Prominence of the Ribs, that is connexed to the Transverse Process's of the Back, whence Ascending Obliquely outwards, become Fleishy, and growing Tendinous, do pass over Three or Four of the Superior Ribs, and join with the First describ'd Tendons at their several Terminations above mentioned. This Disposition of the *Sacrolumbus* is continued the whole Length of the *Thorax*, even to the Fourth *Vertebra* of the Neck; which Upper Part of it is call'd by *Diemerbroek*, *Cervicalis Descendens*, and by him made a distinct Muscle.

C, The Tendon of the last described Muscle and *Longissimus Dorsi*, cut from the Spines of the *Vertebrae* of the Loins.

FHIKK, The *Longissimi Dorsi*; that of the Right Side being free'd from the Spines of the *Vertebrae* of the Back and Loins.

L, The Spines of the *Vertebrae* of the Loins.

MM, The *Musculus Semispinatus* or *Transversalis Dorsi*: The Course of the Fibres of this Muscle agree exactly with that lying below it, called *Musculus Sacer* G; which is Express'd on the Right Side of the Spines of the *Vertebrae* of the Loins between LMC: They are call'd *Transversales Dorsi* and *Lumborum*, because they arise from the Transverse Processes of those *Vertebrae*; from whence they ascend Obliquely and are insert'd to the Spines of the Superior *Vertebrae*; which Oblique ascending Disposition of these Fibres may be observed in this Figure MM.

N, Part of the *Musculus Trapezius* left on the Neck.

O, Part of the *Serratus Superior Posticus* left at its Insertion.

P, Part of the *Spina Scapulae*.

Q, The *Basis Scapulae*.

R, *Musculus Deltoides*.

S, *Infra-spinatus*.

T, *Teres Major*.

VW, Parts of the *Serrati Majores Antici*; that of the Left-Side representing its Progress over the *Subscapularis*, as it arises from the Internal Part of the *Basis Scapulae* as is mentioned Tab. 20.

XXX, The *Serrati Inferiores Postici* rais'd and left at their Insertions.

Y, Part of the *Obliquus Descendens*.

ZZ, The Spines of the *Ossa Ilii*.







T H E THIRTIETH TABLE.



OME of the Muscles employed in Extending the Back and Loins, Rais'd. ABCDEFGHIK, The *Longissimi Dorfi* and *Sacrolumbales* near their Originations.

L, The *Sacrolumbalis* on the Left Side free'd from the Ribs, &c. and hanging loose from the Trunk of the Body.

MM, Those Tubercles of the Ribs connexed to the Transverse Processes of the *Vertebræ* of the *Thorax* made bare; whence the other Order of the Tendinous and Fleishy Fibres of the Sacrolumbal Muscle (mention'd in the precedent Table) do arise.

NN, The Spinal Processes of the *Vertebræ* of the Back made bare.

nn, Their Transverse Processes.

OO, Parts of the *Musculi Splenii Capitis*.

P, The *Infra-spinatus* Rais'd from the *Scapula*.

Q, Part of the *Rotundus Major*.

RR, Parts of the *Serrati Majores Antici* on both Sides.

S, The Upper Part of the Bone of the Arm laid bare.

T, The last or Twelfth Rib.

V, The *Quadratus Lumborum*: It arises Fleishy from the Posterior Part of the Spine of the *Os Ilium*, and after an Oblique ascending Progress is so Inserted to the Transverse Processes of the *Vertebræ* of the Loins: This not unlike the *Rectus Abdominis*, moves the *Vertebræ* of the Loins or *Os Ilium* nearer each other, as either is held most stable: So when we stand on one Foot it draws the *Vertebræ* to that Side, and makes the Trunk come towards a Perpendicular Direction of its Gravity to that Foot; as appears in the Figure of the First Table, where the Right Leg sustains the Weight of the whole Trunk, and Superior Parts: But if we hang by the Hands, then either of these *Musculi Quadrati* Acting, draws the *Os Ilium* nearer the *Vertebræ* of the Loins.

It was necessary the Muscles employ'd in Extending the Head, Neck, Back and Loins should be framed strong enough not only to sustain the Head and Trunk in their Projection forwards from the *Axis* of the *Vertebræ*; but that they should move the whole Spine variously, especially in Bending it backwards: Hence it is these Muscles are not only more Numerous; but are Multiform, as appears in the *Dorsi Longissimus* and *Sacrolumbalis*; whereas the Bending Muscles of the Trunk and Head are but one Pair to each, and they of a Longitudinal Order of Fibres only; namely, the *Par Rectum Internum Capitis*, or *Flexores Capitis*, Tab. 18. LL; and the *Recti Abdominis* Tab. 31. EE.



T H E
THIRTY-FIRST TABLE.

REPRESENTS the Common Integuments of the *Abdomen*, and the External Appearance of its Muscles on the Left Side.

AAAA, The Skin together with the Fat and Membranes of the Left Side Rais'd.

BB, The Fat remaining on the Right Side after Raising the Skin; where the *Lobi* of Fat and the Blood-Vessels passing between them, are Elegantly Express'd.

CDEFG, The *Musculus Obliquus Descendens in Situ*; CC, Its Fleishy Part Springing from the Ribs; DD, Its Inferior Tendinous Part, under which the Fleishy Fibres of the *Ascendens* do Appear.

EE, The Sraight Fleishy Fibres of the *Musculus Rectus*, as they Appear under the Tendons of the Descending and Ascending Muscles.

FF, The Tendinous Intersections of the *Rectus* Appearing thro' the Two Tendons of the Oblique Muscles.

GG, The *Linea Semilunaris* compos'd by the Two Tendons of the Oblique Muscles before they March over the *Rectus* to the *Linea Alba*.

H, The *Linea Alba*.





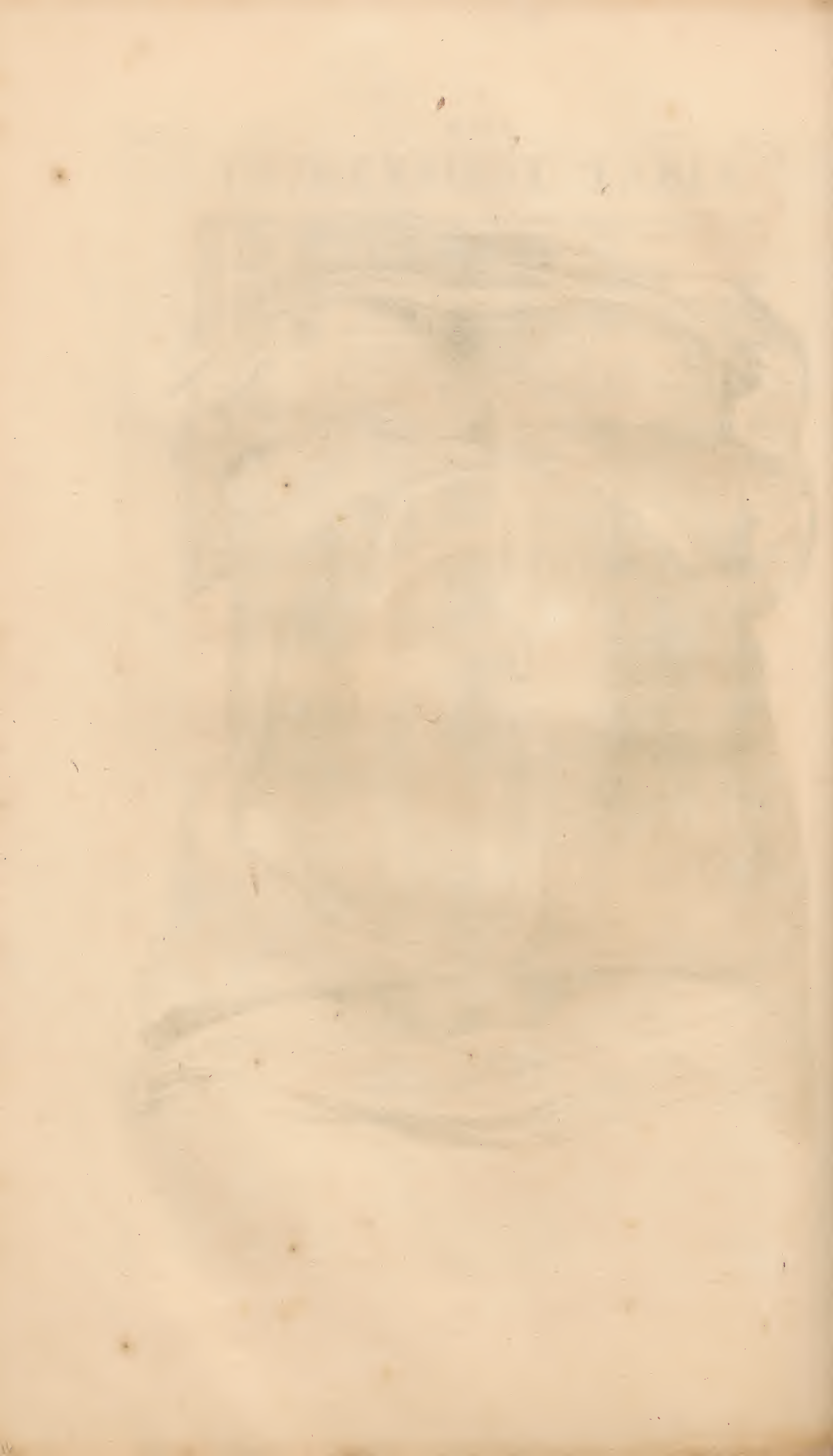


Fig. 1.

Fig. 2.



T H E THIRTY-SECOND TABLE.

Fig. 1.

ABCD
EFG,



H E *Obliquus Descendens*, or *Declivis* Rais'd: See *App. Fig. 1.* 38, 38. It Arises with several partly Fleſhy and partly Tendinous Acute Productions from the Lower Margins of the Fifth, Sixth, Seventh and Eighth Ribs; where its ſeveral ſeparate Origins lie between the Indentations of the *Serratus Major Anticus*; theſe, for better diſtinction we call its Former Origin; Beſides which, it continues to derive more Heads in like Manner from the Ninth, Tenth, Eleventh, and ſometimes from the Extremity of the laſt Baſtard-Rib; (*Vid. Tab. 29. Y.*) where it's frequently Indented with the *Serratus Inferior Poſticus* (*Tab. ib. XX.*) as *Veſalius* takes Notice: From its Former Origin **B B B**, its Oblique Deſcending Fleſhy Part **E E**, Expands its ſelf into a Broad Membranous Tendon **F F**, before it Marches over the *Rectus P P*, to its Inſertion in the *Linea Alba* *Tab. 31. H*, and *Os Pubis* **G**: From its Latter Origin, in the ſame Manner Deſcending, (*Vid. App. Fig. 2. 31.*) it Ends partly Tendinous in the *Ligamentum Pubis* **C C**, but chiefly Fleſhy on the Superior and Fore-Part of the *Os Ilium*. Beſides the Offices commonly Aſcrib'd to this Muſcle in Compreſſing the Inteſtines and Bladder, &c. either in Extruding the *Feces* and Urine in both Sexes, or *Fetus* in Women; They have ſtill a farther Uſe: That Part of this Muſcle that's Interjacent between its Lower Origin and Spine of the *Os Ilium*, *Tab. 29. Y.* bearing an Analogy in its Poſition to the *Maſtoideus* of the Head, (*App. Fig. 1. 14.*) ſerves for the Circumrotation of the Trunk upon the *Axis* of the *Vertebrae*; as when we Convert our Bodies to the contrary Side, the Feet remaining Stable.

H H H, The Cartilaginous Endings of the Seventh, Eighth, Ninth, and Tenth Ribs; which, in the following Table are cut off at the Bony Parts of the Ribs and Rais'd: *Vid. Tab. 33. K K*.

I K K, The *Muſculus Tranſverſalis* Rais'd from the *Peritoneum* and Reclin'd Laterally; It derives a Tendinous Origin from the Tranſverſe Proceſſes of the *Vertebrae Lumbares*, and a Fleſhy One, from the Cartilaginous Endings of the Ribs, Spine of the *Os Ilium*, and *Ligamentum Pubis*; whence it paſſes over the Convex Surface of the *Peritoneum*, compoſing a Broad Tendon as it Marches under the *Rectus* to its Termination in the whole Length of the *Linea Alba*. When this Muſcle and its Partner Act, they preſs the *Abdomen* directly Inwards.

L M N O P, The *Reſti Abdominis*; One remaining in *Situ*, the other being Rais'd: Either of theſe Muſcles derives its Origin from Two of the Cartilages of the True, and One of Baſtard Ribs; and in its Deſcent has Four, ſometimes Five Tendinous Interſections **O O O O**; ſtill Leſſening it ſelf below the Navel, becomes Tendinous, immediately above the *Os Pubis*, where it's Implanted **M**: This Bends the Trunk of the Body.

P P, The Under-Side of the *Rectus*, where the Epigaſtrick and Mammary Blood-Veſſels may be ſeen.

Q, The *Pyramidales*, which derive their Fleſhy Origin from the Upper-Part of the *Oſſa Pubis*, and Terminate in the *Linea Alba*.

R R S S, The *Obliquus Aſcendens*, or *Acclavis in Situ*: It Arises from the Fore-Part of the Spine of the *Os Ilium* and *Ligamentum Pubis*, whence Mounting with an Order of Fibres Inclining Forewards, Forms a Broad Membranous Thin Tendon **S S**, Marching over the *Rectus* to its Implantation in the *Linea Alba*; the Poſterior Part of it being Inſerted to the Cartilages of the Eighth, Ninth, Tenth, Eleventh, and Twelfth Ribs. Beſides its Office in Compreſſing the Contents of the Lower Belly; that Part of it that's between the Spine of the *Ilium* and Cartilaginous Endings of the Ribs, is not only Uſeful in drawing the Ribs Downwards in Expiration; but its

Fleſhy Fibres (Interſecting thoſe of the *Deſcendens* in the *Ilium*) are alſo employ'd in Converting the Trunk of the Body to the ſame Side, as the *Deſcendens* above Noted, do's to the Contrary. In the Structure and Reciprocal Cooperations of theſe Partſ of the Aſcending and Deſcending Oblique Muſcles, the Art of Nature is very Admirable.

T T V V, The *Peritoneum* under which the Inteſtines Appear **T T**. Tho' the *Peritoneum* is a Transparent, Thin Membrane, yet it conſiſts of divers *Laminae*, and is apparently Double in divers Parts, eſpecially between the Navel and *Os Pubis*: Beſides its giving an External Double Integument to all the *Viſcera* of the Lower Belly, it Provides ſtill others Investing each *Viſcus*, and Helps to compoſe the *Omentum* and Meſentery. What vaſt Extensions the Membranes of the *Peritoneum* are capable of, is well known to thoſe who have ſeen it Affected with a Dropſie; for in its Duplicature I have often taken out above Fourſcore Pints. *Job Meekren* in his *Ob. Med. at Chir.* tells us of a Hundred and Twenty-Five Pints of clear Water contain'd within the Duplicature of the *Peritoneum*; beſides, the Membranes themſelves (in the Caſe now mention'd) were Thickned beyond a Thumb's Breadth, and their Internal Surface furniſh'd with many Fleſhy Bodies and Water-Bladders, call'd *Hydatides*; ſo that the whole, when taken out, ſeem'd to be a Monſtrous Maſs of Fleſhy Matter.

Fig. 2.

The Texture of the *Peritoneum* Examin'd with a Microſcope.

A A, The Nervous Fibres Running according to the Length of the *Abdomen*.

B B, Other Fibres carri'd in a Circular Manner from the Nervous Plexus thro' to the Breadth of the *Abdomen*.

C C, The *Fibrille* which join the preceding Fibres together, and are Complicated with them.

D D, The Nerves and their Branches which are very Remarkable about the Ventricle.

E E, The Blood-Veſſels broken off.

Concerning the Lympha-Ducts of the *Peritoneum*, &c. conſult *Nuck's Adenographia Curioſa*, Cap. IX.

The *Peritoneum* has divers Perforations; Forewards, for the Umbilical Veſſels in the *Fetus*; in its Upper-Part, for the *Vena Cava*, *Gula*, and Eighth Pair of Nerves, &c. In the Lower-Part by the *Anus* Bladder of Urine, and *Uterus* in Women: in this Lower-Part of the *Peritoneum*, it's Two Proceſſes attending the Spermatick Veſſels fall next under our Inſpection.

Fig. 3.

A A, Part of the *Peritoneum*.

B, The Proceſs of its Internal Membrane, proceeding from within the Cavity of the *Abdomen*.

C C, The Spermatick Veſſels as yet Cover'd with the Double Proceſs of the *Peritoneum*. We call it a Double Proceſs of the *Peritoneum* in Men, that paſſes thro' the Muſcles of the *Abdomen* in the Inguen, becauſe it conſiſts of Two Membranes of different Extents; the External of which, being a Continuation of the External Membrane of the *Peritoneum*, is there call'd *Tunica Vaginalis*, Incloſing the Spermatick-Veſſels and Teſticle; the Internal Proceſs Deſcends about Four Fingers Breath on the Spermatick-Veſſels in the *Inguina*, and then Cleaves to them Inſeparably (and this *Nuck* calls a *Diverticulum*) as it's Expreſt, tho' ſomewhat ſtiſly, in the following Figure.

Fig. 4.

A A, Part of the Internal Membrane of the *Peritoneum*.

B, The Orifice or *Anulus* of its Proceſs.

C, Its Progreſs on the Spermatick-Veſſels, call'd *Diverticulum*.

D, Its Cohesion to the Spermatick-Veſſels.

T H E

THIRTY-THIRD TABLE.



HE W S the *Viscera* of the Lower Belly *in Situ*, after the Common and Proper Integuments of the *Abdomen* are laid Open, and some of them cut off, and the Cartilaginous Endings of the Bastard Ribs divided from their Bony Parts, and turn'd Upwards.

A A B B, The *Omentum*, where its Upper Membrane Appears Contiguous to the Bottom of the Stomach, from whose Inferior Coronary Vessels it receives its *Arteriæ Gastricæ, Emploicæ Dextræ, Sinistræ* and *Mediæ*, which have their Correspondent Veins entering into the Coronary Veins, and Convey their Blood to the *Vena Porta*; the Arteries being Propagated from the *Cœliack Arteries*. This Superior Part or *Lamina* of the *Omentum* is not only a Continuation of that External One of the Ventricle, Borrow'd from the *Peritonæum*, but its Right *Ala* in like Manner is deriv'd from the Lower Part of the Liver, and its Left from the Concave Part of the Spleen: Thus the Superior and Outwardmost Part of the *Omentum* Arises; and after Descending on the Intestines, joins or is continued to its Inferior or Inward Part, in like Manner deriv'd from the *Colon*: Between these Superior and Inferior Parts, is fram'd the *Bursa Omenti*; which may be plainly Discover'd, if you pour Water into its Cavity; and tho' the Water will pass it's many *Foramina*, yet it will nevertheless Discover the Lower Part of the *Omentum* to be Double.

CC, The Bottom of the Stomach where its Inferior Coronary Blood-Vessels may be seen.

DD, The Liver.

E, The *Ligamentum Suspensorium Hepatis*, in which the Umbilical Ligament is Inclos'd.

F, The *Fissure* made by the Umbilical Ligament.

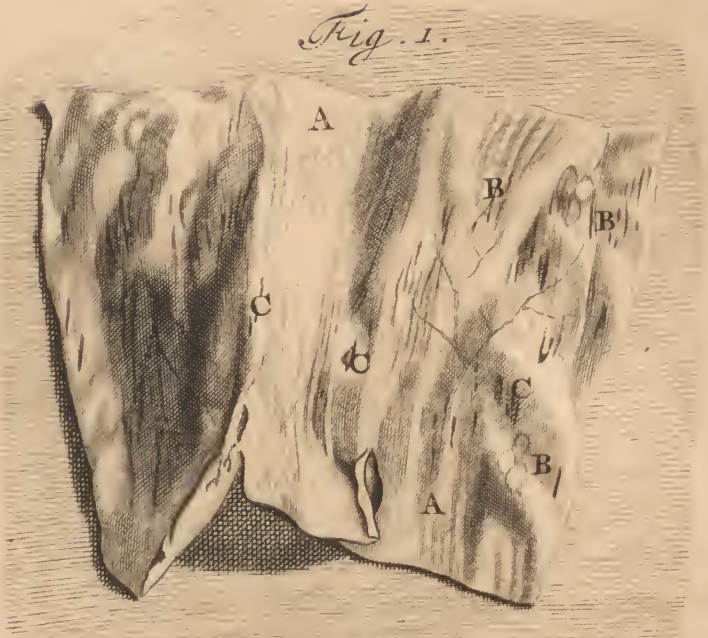
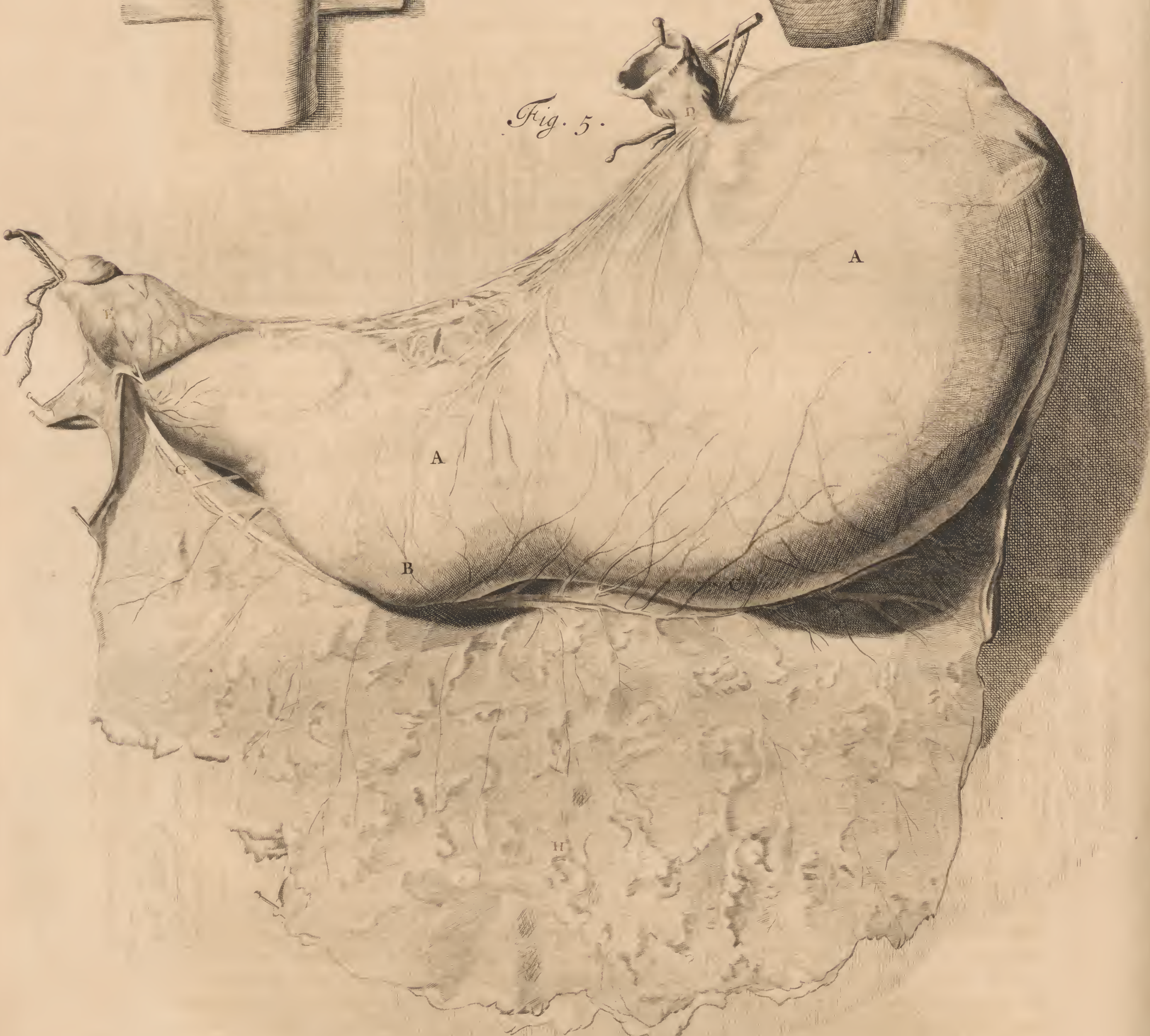
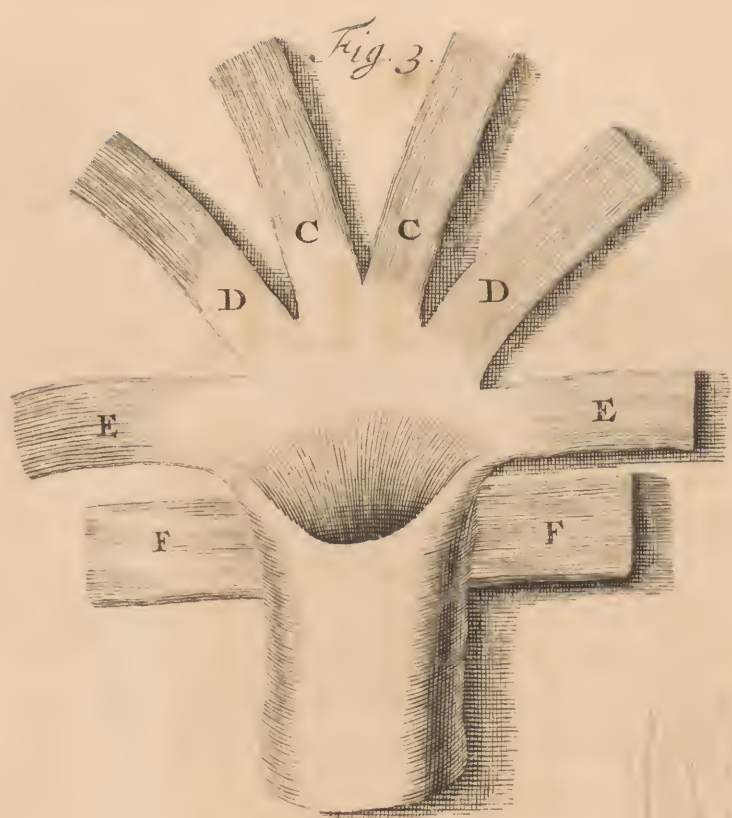
GG, Part of the *Colon* near its Beginning in the Right *Iliæ*.

HHIII, The Small Guts, some of which being here Cover'd with the *Omentum*.

KK, The Cartilaginous Endings of the Bastard Ribs cut from their Bony Parts, and turn'd up towards the *Sternum*: To these Cartilages, Parts of the Transverse Muscles of the *Abdomen* and the *Diaphragma* may be seen to Adhere in this Figure.







T H E THIRTY-FOURTH TABLE.

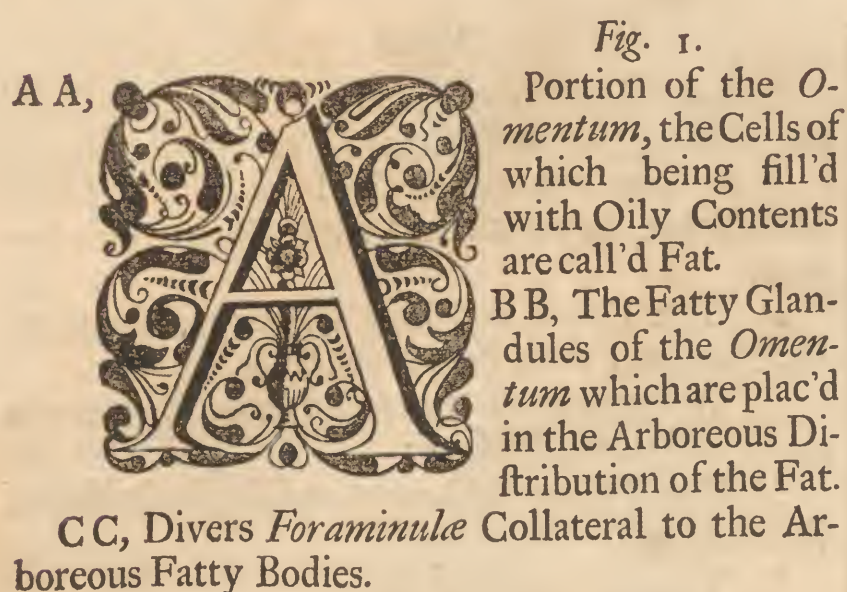


Fig. 1.

Portion of the *Omentum*, the Cells of which being fill'd with Oily Contents are call'd Fat. B B, The Fatty Glands of the *Omentum* which are plac'd in the Arboreous Distribution of the Fat. C C, Divers *Foraminule* Collateral to the Arboreous Fatty Bodies.

Fig. 2.

The Membranes of the *Omentum* free'd from their Oily Contents; which Professor *Bidloo* Proposes to be done after the following Manner. When the Blood-Vessels of the *Omentum* are Injected with Wax, or any Tenacious Body, then dip the whole in hot Oil of Turpentine, and with your Hand squeeze it, and move it up and down till the whole Mass of Fat is dissolv'd in that Oil. Afterwards expose the Membranes to the Air, or gentle Fire to dry them.

A A, The Upper *Lamella* or Membrane of the *Omentum*.

B B, The Lower Membrane of the *Omentum*.

C C, The *Foraminule*.

D D, The Arboreous Ramifications of the Porous Cells, whence the Fat or Oil is Expressed.

E E, The Blood-Vessels Injected with Wax according to *Bidloo*.

Fig. 3, 4.

These Figures of the Muscles of the *Pharynx* are Copied after *Bourdon's* Table 4. Fig. 28, 29. and are agreeable to the Erroneous Descriptions of those Muscles by *Ryolan*, *Spigelius*, *Veslingius*, *Bartholin*, &c. The Muscular Contrivance of this Organ being vastly differing from what is here Expressed, I shall add a Figure of it in the *Appendix*.

Fig. 5.

The Stomach with Part of the *Omentum* taken out of the Cavity of the *Abdomen*; the Stomach being somewhat Extended with Wind, and plac'd according to its proper Position.

A A, The External and Anterior Surface of the Stomach, Cover'd with a Common Membrane deriv'd from the *Peritonæum*.

B C, Two Bunchings out in the Lower Part, or *Fundus* of the Stomach.

D, Part of the *Gula* at the Upper or Left Orifice of the Stomach, call'd *Cardia*.

E, Part of the *Intestinum Duodenum* Arising from the Right or Lower Orifice of the Stomach, call'd the *Pylorus*.

F, The Superior Coronary Blood-Vessels of the Stomach, and the Nerves of the Eighth Pair Complicated with each other, are here Elegantly Expressed.

G, The Inferior Coronary Artery and Vein of the Stomach. These Coronary Blood-Vessels are in like Manner distributed to the *Omentum*.

H, The Superior or Outward Membrane of the *Omentum*, hanging at the Bottom of the Stomach.

In Dissecting the Morbid Body of a Young Gentlewoman, by the Order of Dr. *Radcliff*: Amongst other *Phænomena* of the *Viscera* in the *Abdomen*, I found the *Omentum* so Lessen'd, that at first Sight, it appear'd doubtful whether there ever had been such a Part fram'd in that Subject; but upon stricter Enquiry, that little Remains of it seem'd to Represent a Heap of small Glands, con-

taining a Steatomatous or Suet-like Matter. Nor was this Appearance of these *Steotomæ* on the *Omentum* only; but a Multitude of Little White Bodies or Specks (not unlike those of the *Omentum*) plac'd at some small Distance from each other, were spread on the Outward Membrane of the Stomach, Intestines, and Internal Surface of the *Peritonæum*. In this Subject the External Parts of the Small Guts so stuck to each other, that they seem'd to be contain'd in One proper Covering, or not unlike the Brain Cover'd with the *Pia Mater*: so strictly did the Intestines cleave to each other, that it was not without Violence I could any where Divide them to see the Mesentery: By this means the Peristaltick Motion of the Guts must needs be very much Lessen'd, if not quite Hindred; so that it was no wonder to find their whole Chancel fill'd with Excrements, even from the *Pylorus* to the *Anus*: Besides the Intestines had suffer'd Mortifications in divers Parts, whilst other Parts of them were Inflam'd and very much Thickned: Nor was there any Part of them appear'd of a Natural Constitution; so general did this Diseas'd-Habit Affect the *Peritonæum*, in all its Expansions. Nor can I omit doing Justice to the Inquisitive Dr. *Radcliff*, who upon frequent Observations of the Symptoms of this Case, left this Prognostick, *That there was scarce any of the Viscera of the Lower Belly which had escap'd the Attacks of the Disease*: All which he suppos'd to Arise from a Scrophulous-Habit, as appear'd by very large Tumified Glands of the Mesentery; of which Two very Remarkable Ones had so Comprest the *Receptaculum Chyli*, as very little (if any) of the Aliment could at Length pass into the Blood. Whence the Body became so very much Emaciated, that scarce any thing but Bones appear'd under the Skin: Nor did I any where see the least Lobe of Fat in the whole Dissection. From what has been above taken Notice of in the *Omentum*, and Surface of the *Peritonæum*, whether Covering the Inside of the *Abdomen*, or Outfides of the Intestines; It Appears, that when the *Mucus*, which is necessary in Lubricating the Intestines, is obstructed; those Parts are Subject to Adhesions, and the Peristaltick Motion of the Latter can no longer be Perform'd, and tho' the Existence of proper Glands for separating this *Mucus* from the Blood do's not offer in Common Dissections, yet it may be hop'd that the frequent Examining of Morbid Bodies, will at one time or other Demonstrate them; which, I am apt to believe, not unlike the Sweating Glands of the Skin, are plac'd at certain Distances, and do discharge their *Mucus* from their Excretory Pores in like Manner; which *Mucus* may joyn with Fatty Exsudations from the *Omentum*, &c. and make a Composition necessary for making the Intestines slide on each other. That there is a Slimy Matter besmearing these Parts, may be observ'd in Opening any Large Animal, not Diseas'd, soon after Death. It is well known to the Butchers that this *Mucus* makes the Hands Glib or Smooth; to which End they commonly Use it, so soon as they have Open'd any Animal, by Rubbing their Hands with the Intestines. I know it's commonly suppos'd the Water in an *Ascites* proceeds from a broken Lymph-Duct within the Cavity of the *Abdomen*; but it's not unlikely that that Serosity may at least sometimes Arise from an Exsudation by those Glands; since we constantly find the *Peritonæum* very much Thickned in those Cases.

T H E THIRTY-FIFTH TABLE.



H E Membranes, Glandules, Blood-Vessels, &c. which compose the Stomach.

Fig. 1, 2.

A A, &c. Portions of the Stomach shewing its First or External Membrane, borrow'd from the *Peritonæum*; the Veins being Injected with Wax, are extended beyond their Natural Magnitude.

BB, The Superior and Inferior Coronary Veins, Inosculating with each other in their Large Trunks.

Fig. 3.

A B, &c. The Branches of the Blood-Vessels on the External Membrane of the Stomach, Representing their Various Plexusses and Mutual Inosculations with each other, *viz.* The Veins being join'd with Veins, and Arteries with Arteries, before they become Capillary.

Fig. 4.

The Second Membrane of the Stomach, call'd the Muscular Membrane, consisting of Two Orders of Fibres.

A B B, The First and Superior Order of Fibres, continued between the *Pylorus* and Upper Orifice of the Stomach.

A C C, The Second or Inferior Order of Fibres, embracing the *Fundus* of the Stomach.

Fig. 5.

A Portion of the Second or Muscular Membrane of the Stomach Dri'd.

A A, The First Order of Fibres,

B B, The Second; Consisting of Fleishy and Tendinous Parts,

C C, Their Fleishy Parts,

D D, Their Tendinous Parts.

The Third, or Internal Membrane of the Stomach, may be Divided into Three *Lamellæ*, and therefore may be consider'd in a Threefold Manner.

Fig. 6.

A A, The Inward Surface of the Third Membrane of the Stomach, by Dr. *Willis* call'd the Villous Tunicle: The *Villi* or Velvet-like Surface of it, is best shewn by dipping it in Scalding Water.

B B, The Glandules as they Appear obscurely under the *Villi*.

C D, &c. The Glandules and Vessels of the Stomach as they Appear where the *Villi* are taken off, which may easily be done with the Assistance of Hot Water. This may be esteem'd the Second Part of the Third Membrane of the Stomach.

Fig. 7.

The Third or Last Division of this Internal Membrane of the Stomach, which *Bidloo* and others call the Tendinous, and Dr. *Willis* the Nervous Membrane.

A B, Divers Perforations for the Blood-Vessels to pass thro' this Membrane.

Fig. 8.

The whole Stomach partly laid Open to shew the Foldings of its Internal or Third Membrane.

A A, The Foldings of the Internal and Third Membrane, in which the Villous Surface do's Appear.

B, The Upper and Left Orifice or Mouth of the Stomach, with Part of the *Gula*.

C, A Portion of the *Intestinum Duodenum* continued to the *Pylorus*.

D, The *Pylorus* or Lower and Right Orifice of the Stomach.

E, The *Antrum Pylori*.

The *Omentum* and Superior and Inferior Coronary Blood-Vessels, are here again Exprest as in the preceding Table, Fig. 5.

Fig. 9, 10.

The Two Orifices of the Stomach when Dri'd after Inflation. Fig. 9, The Superior. Fig. 10, The Inferior.

The *Plexus* of Blood-Vessels Appearing in the Inside of the Stomach, Fig. 8. are Remarkable, and their Appearance is owing to the Stagnation of the Blood in them. The Stomach cannot be Wounded into its Cavity, but many of these Vessels, especially the Arteries must be Divided, and no small Effusion of Blood must necessarily happen, which if it flows into the Cavity of the Stomach, must either be Ejected by Vomit, or pass down the Intestines with the Excrements, if the Patient Survives: An Instance of which lately occur'd, where my Friend Mr. *Goodier* call'd me to see the Patient; who had receiv'd a Wound by a Sword on the Right *Hypochondrium*, which pass'd Obliquely to the *Linea Alba*, immediately below the Ensisiform Cartilage: A Vomitting of Blood soon follow'd with Syncopes, which denoted the Stomach to be Wounded, not less than a Pound of Coagulated Blood being Ejected by the Mouth so soon as he was brought to his Bed. After some Hours the Vomiting ceas'd, and the Pulse was recover'd which before was very feeble: Nor was it many Days before the Patient Recover'd and could Drink Two or Three Quarts of Strong Drink at a Sitting; what became of him afterwards, we could by no means learn. By this it Appears that Wounds in the Stomach are not always Mortal, tho' they very frequently prove so, as in the Case of one Wounded in like manner with a Sword on the Left *Hypochondrium*, in whom the Stomach was Wounded also; but in this the Contents of the Stomach in no small Quantity, were Discharg'd with a great deal of Blood into the Cavity of the *Abdomen*, as Appear'd on Dissecting his Body. If the Trunk of a Large Artery happens to be Wounded on the Stomach, it is a great Chance but it proves Mortal thro' the Flux of Blood, but if the Wound happens where the Blood-Vessels are Capillary, the Flux of Blood do's not prove Fatal.

Fig. 10.



Fig. 9.



Fig. 8.



Fig. 5.

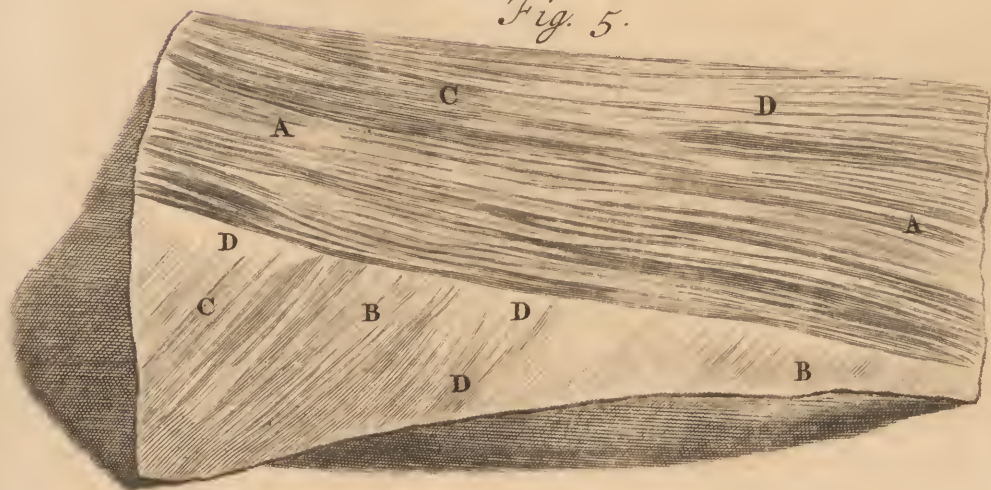


Fig. 2.



Fig. 7.



Fig. 4.



Fig. 6.

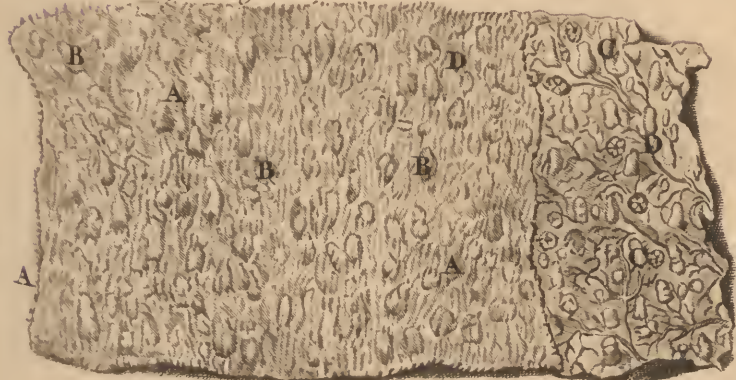
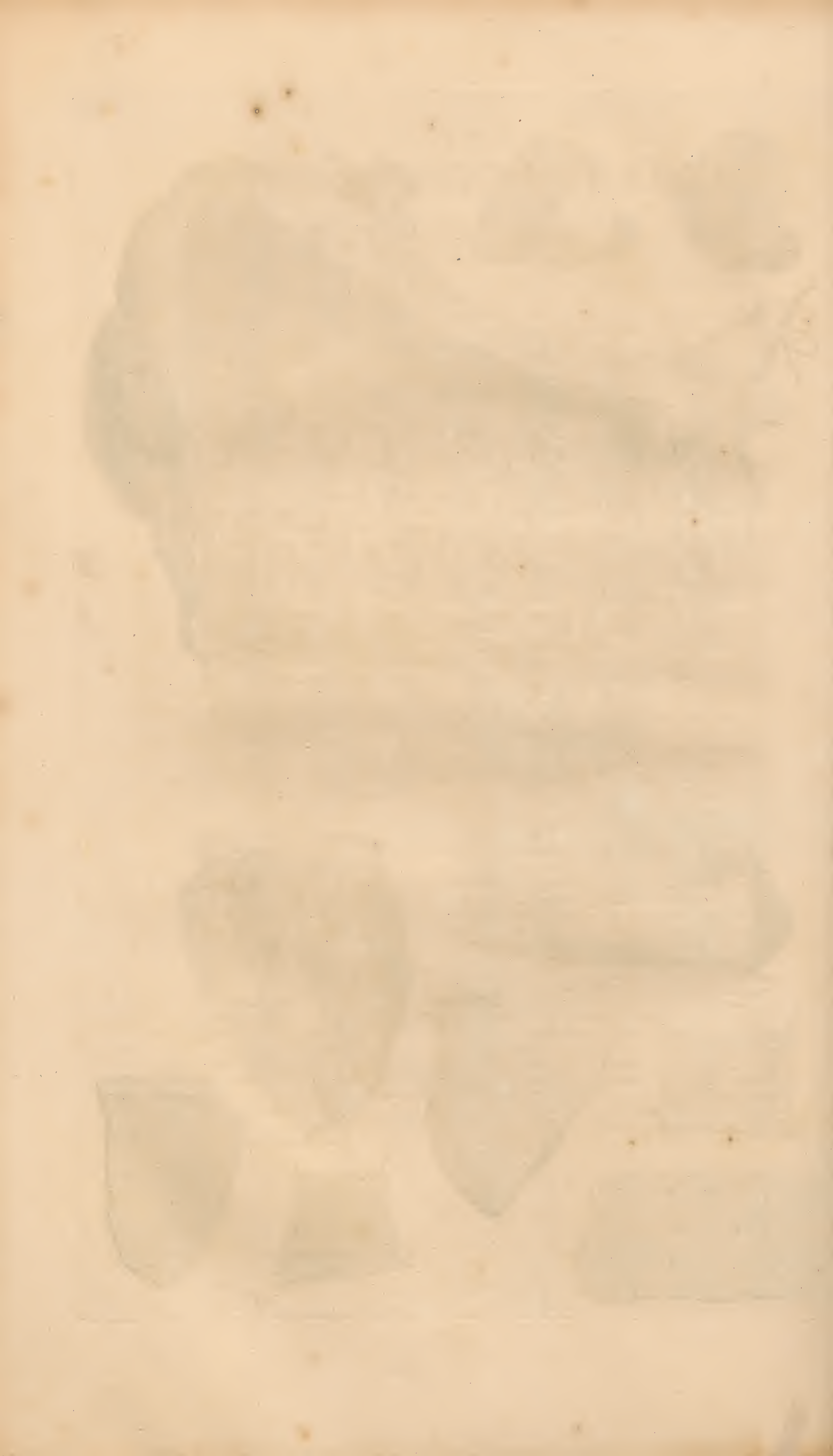


Fig. 3.



Fig. 1.





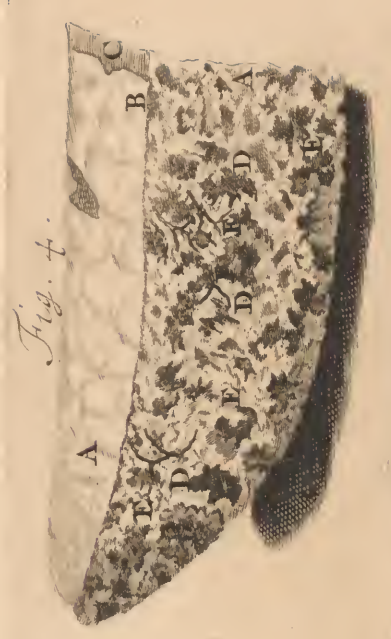


Fig. 4.

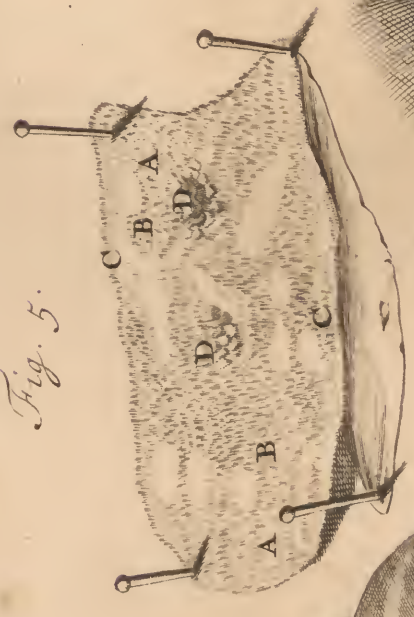


Fig. 5.



Fig. 6.



Fig. 6.



Fig. 6.



Fig. 7.

T H E THIRTY-SIXTH TABLE.

Fig. 1.



HEWS the Lower Part of the Stomach and a Portion of the *Intestinum Duodenum* continued to it, together with the *Pancreas* and Spleen.

A A, The Upper Part of the *Duodenum* continued from the Right Orifice of the Stomach or *Pylorus*, in a Semicircular Manner; in which Bending of the Gut, the Common Passage for the Gall and Pancreatick Juice empties it self N. This Curvation of the Intestine is here necessary, lest the Aliment after having undergone a Preparation in the Stomach, should too quickly descend into the Small Guts, before it has met with a due Mixture with the Gall and Pancreatick Juice.

B, The *Ductus Pancreaticus* made bare, before it enters the External Membrane of the Intestine, between which, and the Internal Membrane, it passes before it arrives at its Orifice N, in Conjunction with the Common Gall-Duct.

C, The Progress of the Common Gall-Duct in like Manner between the Membranes of the Gut, before it arrives at its Orifice N, in Conjunction with the Pancreatick Duct.

DD, The Superior and External Part of the *Pancreas* as it appears in its proper Situation.

EE E, Part of the Bottom of the Stomach next the *Pancreas*, *Colon* and Spleen; whence divers Blood-Vessels are propagated, especially Veins, which discharge Part of the Blood from the Stomach into the *Ramus Splenicus*: The most remarkable of these have obtained the Denomination of *Vasa Brevia*; to which, some *Anatomists* have inconsiderately assign'd divers Uses.

FF, The Internal Concave Part of the Spleen next the *Pancreas* and Stomach, cover'd with its Proper Membrane, as well as a Common one continu'd from the *Peritoneum*.

G, The External Membrane of the *Pancreas* rais'd and pinn'd out:

H, That of the Spleen in like Manner rais'd and pinn'd out.

III, Divers *Vesiculae* or Airy Bladder-like Appearances, occasion'd by the Breaking forth of the Wind into the *Interstitia* of the Common and Proper Membrane of the *Pancreas*, in Blowing into its *Ductus Excretorius* B.

K, The *Duodenum* open'd, to shew the Common Orifice of the Gall and Pancreatick Duct.

LL, The Pancreatick Duct made bare in divers Parts of the *Pancreas*.

M, Part of the Common Gall-Duct.

N, The Common Orifice of the Gall and Pancreatick Ducts, opening into the Cavity of the *Intestinum Duodenum*.

OO, &c. The *Arteria Splenica* injected with Wax; its Magnitude and Tortuous Progress being very remarkable as it is truly Express'd in this Figure.

PP, Divers Arteries of the *Pancreas* arising out of the Splenic Artery.

Q, The *Vena Splenica* in whose Cavity a Blow-Pipe is inserted.

R, One of the Lympheducts arising from the Spleen pinn'd out. In Blowing into the *Vena Splenica* of a Castling Calf, I have frequently observ'd the Lympheducts of the Spleen distended with Wind: The like has happen'd by Blowing into the Splenic Artery after tying the Vein, tho' not so immediatly as by Blowing into the Vein. The same *Phaenomena* I have observ'd in the *Penis* of a Dog by Blowing into the Veins of that Part. The Accurate *Nuck* in his *Adenograp. Curio*. p. 52. tells us by forcibly Blowing into the Splenic Artery, he has not only seen divers *Vesiculae* rise on the Surface of the Spleen; but divers Lymphatick Vessels arising from those *Vesiculae* and distended with Wind also: In the Subsequent Page he takes Notice that the Spermatick Vein of the Testicle being distended with Wind, shews the Lympheducts on the *Tunica Vaginalis*, but in Blowing into the Spermatick Artery of that Part, the Lympheducts are by no Means distended with Wind: By this, it appears the Lympheducts of the Spleen, *Penis* and Testicles, do not arise from the Extremities of the Blood-Vessels of those Parts, as the Lympheducts of other Parts seem to do; but that the Venous Channels of those Parts seem to give the immediate Originations to their Lympheducts.

S, The Spleen partly made bare of its Integument.

Fig. 2.

The *Ductus Pancreaticus* injected with Wax, and free'd from the Body of the *Pancreas*, together with a Portion of the *Intestinum Duodenum* and Common Gall-Duct dried.

A, Part of the *Duodenum* dried.

B, The *Ductus Pancreaticus* lying between the Membranes of the Intestine before it joyns with the Common Gall-Duct.

C, The Common Orifice of the Gall and Pancreatick Duct opening into the Intestine.

D, The Common Gall-Duct.

EE, The Trunk of the Pancreatick Duct.

FG, The Ramifications of the Pancreatick Duct, which arise from the Extremities of the Blood-Vessels of the *Pancreas*.

Among the Opinions hitherto held concerning the Office of the Pancreatick Juice, that of *Brunnerus* seems most probable: That like the *Saliva* it is a Dissolvent or *Menstruum* for a farther Concoction, in Order to Chylification. Nor can I conceive the *Succus Pancreaticus* can Act with any Hostility by Way of Fermentation with the Bile and Aliment, as *Franc. Sylvius*, *Bern. Swalve*, *Rog. de Gaff*, and *Isbrand de Diemerbroek* apprehend; or that it takes off the Acrimony of the Gall; which Latter, would be to rectifie a Mistake in Nature that might have been avoided in the First Design: Wherefore the *Pancreas* appears to be a Large Salival Gland, or One of the Largest of the Glands of the Intestines, which continually supplies a proportionable Quantity of Liquor for the End above mention'd. Besides, the *Pancreas* has another as it were accidental Use, (*viz.*) To discharge those Serofities from the Blood which we find in taking of Purging Medicines; Or at other Times, when the Blood is disordered so that a *Diarrhoea* happens, the *Pancreas* as well as the Glands of the Intestines are those Strainers which discharge the Vitiated Juices from the Mass of Blood.

Fig. 3.

The Spleen with its Blood-Vessels Injected with Wax.

AA, The Internal Concave Part of the Spleen next the Stomach and *Pancreas*.

BB, The Splenic Arteries Injected with Red Wax.

CC, The Veins fill'd with White Wax.

DE, The Various Flexures and Contortions of the Veins and Arteries near the Surface of the Spleen.

Fig. 4.

A, Part of the Spleen of some Quadrupede cut off, after the whole Spleen has been distended with Wind and dried.

B, The External common Membrane deriv'd from the *Peritoneum*.

C, The Internal Proper Membrane of the Spleen.

DE, &c. The Cells of its Cavernous Body, which open into the Large Veins of the Spleen.

In the Humane Spleen these Cells are more Numerous and Less, and open into the Extremities of the Veins and Arteries. I know *Ruyfch* in his Accurate *Anatomical Epistles* lately publish'd, denies the Existence of these Cells as well as Fibres in the Humane Spleen, but if you blow into the Splenic Vein, or Inject Water by the Arteries, when the Outward Membrane of the Spleen is not torn or broke in taking it out (which are very liable to happen in freeing the Humane Spleen) you may be satisfied of the Existence of its Cells; and if you Inject the Veins with Wax you will find this Difference from that of a Quadrupede; that the Wax in the Humane Spleen do's not reach the Cells, except it is driven on with great Force, and Injected very hot; but if you Inject Wax into the Spleen of an Ox, Dog, or the like, you will find all its Cells soon distended with it, and the great Ramifications of the Veins scarce to be distinguished, by Reason the Wax so soon passes out of their Sides into the Cells.

Fig. 5.

AA, The Internal Face of the Proper Membrane of the Spleen of a Quadrupede.

BC, The Fibres broke off which pass between the Cells to each Side of the proper Membrane of the Spleen.

DD, Some of the larger Cells of the Spleen of various Figures.

Fig. 6.

The whole Spleen free'd from its External and Proper Membranes, after its Blood-Vessels were Injected with Wax.

AA, The Arteries.

B, The Veins of the Spleen fill'd with Wax.

a a b b, The Ramifications of the Blood-Vessels before they enter the Body of the Spleen.

C, Part of the *Capsula* or Proper Membrane of the Spleen, according to *Bidloo*.

D, The Nervous Plexus.

EE, The Ramifications of the Blood-Vessels at their Extremities, into whose Sides the Cells of the Humane Spleen open.

F, The *Interstitia* at the Extremities of the Blood-Vessels, which *Bidloo* Calls the Cells.

GG, The Extremities of the Lympheducts, and divers Fibres of the Spleen. The Texture and Composition of the Spleen being thus known, we should in the next Place consider what Office this Part has in the Animal Oeconomy; but that being a Task too great for the Limits of our present Page, I shall insert my Thoughts of it elsewhere.

T H E THIRTY-SEVENTH TABLE.

Fig. 1.



HE Superior Convex Surface of the Liver here Printed on the Reverse.

AA, The Superior Gibbous Part of the Liver, where divers Lympheducts may be seen.

BB, The *Ligamentum Suspensorium Hepatis*, fasten'd to the *Diaphragma*, its Fore-Part being cut from the Ensiformal Cartilage.

CC, Part of the *Diaphragma*; in which its Fleshy and Tendinous Parts appear together with its Blood-Vessels.

D, The *Ligamentum Umbilicale* pinn'd out.

EE, That Part of the Liver which is Extended towards the Left Side, and rests on the Stomach, and is sometimes (as in this Subject) divided into Lobes.

F, Seems to be Part of the *Diaphragma*: *Bidloo* makes it to be a Ligament that adheres to the Ensiformal Cartilage, which I can by no Means conceive.

G, A Portion of the External Membrane of the Liver, continued from the *Peritonæum*, rais'd.

Fig. 2.

The Inferior Concave Surface of the Liver.

A, The Right Side of the Liver.

B, The *Ligamentum Suspensorium Hepatis* pinn'd out.

C, The *Ligamentum Umbilicale*.

D, The External and Common Membrane of the Liver rais'd and pinn'd out.

E, The Liver cut into, to shew its Inside.

F, Part of the *Diaphragm*.

G, The *Arteria Hepatica*, which we commonly find divided into Two Branches or Trunks of the Size of this here Express'd, before they enter the Liver.

HH, The *Vena Porta* as it enters the Liver.

I, The *Capsula Communis* or Production of the *Peritonæum*, which is said to inclose the *Vena Porta*, *Arteria Hepatica*, and *Ductus Biliarii* in their Progress thro' the Liver; which Description of it, I am apt to think, is rather imposed on it in Favor of some Conjectures concerning the Office of the *Vena Porta* within the Liver, than any real Appearance of it in Nature; tho' it is very plain those Vessels within the Liver do appear cover'd with a Common Inclosure; the like of which may be seen on the Vessels within the Spleen, Kidneys, &c.

KK, The *Vena Cava* Extended on a Pencil.

L, The Gall-Bladder.

M, A Lympheduct passing on the Surface of the Gall-Bladder.

N, The *Ductus Cysticus*.

O, The Common Gall-Duct.

P, The Lympheducts of the Liver marching on the *Vena Porta* towards their Lymphatick Glands, placed on the Trunk of that Vein below the Liver.

Concerning the Distribution of the Vessels of the Liver, and the intimate Structure of that great Gland, consult the following Table.



Fig. 1.

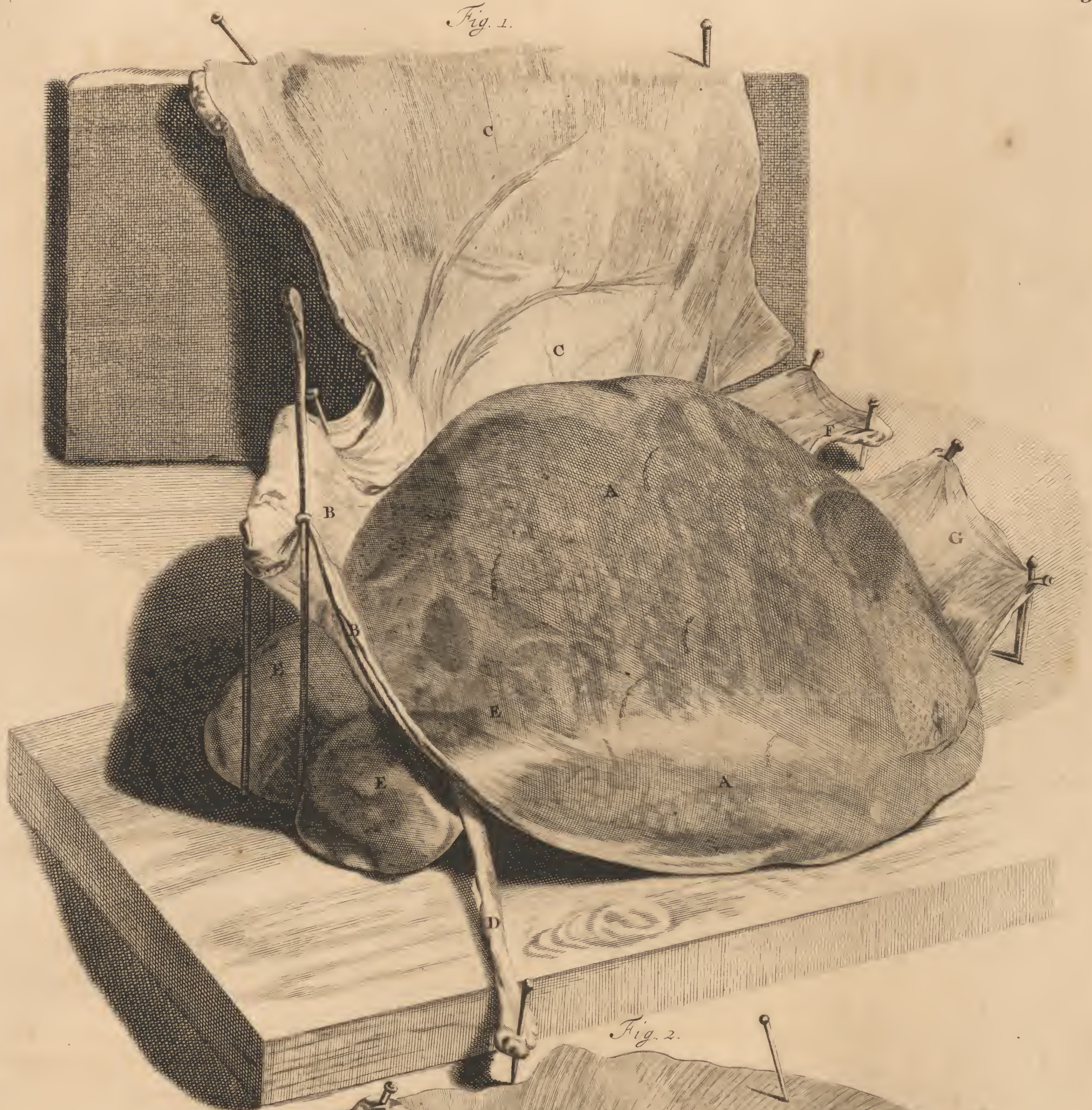


Fig. 2.

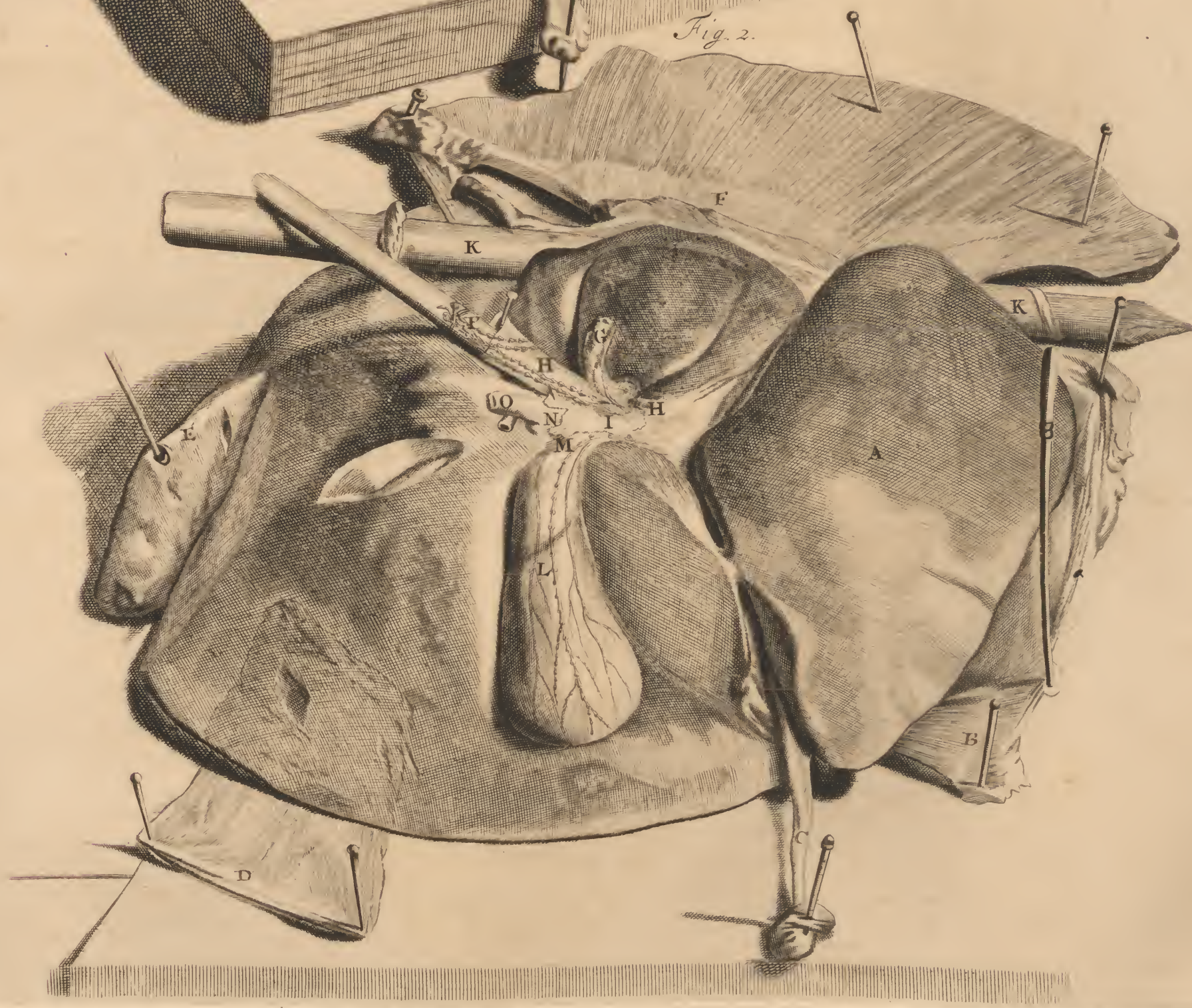


Fig. 5.



Fig. 4.

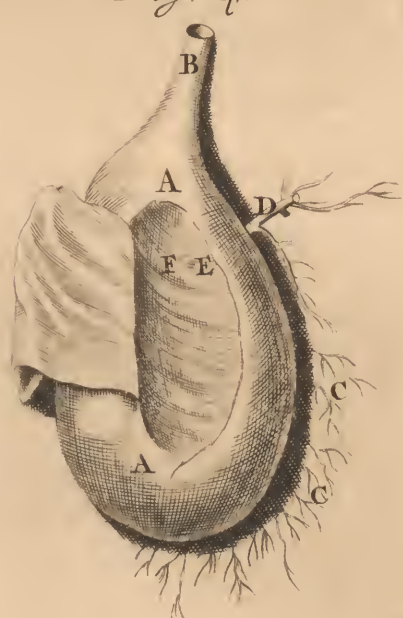


Fig. 1.



Fig. 3.



Fig. 2.



T H E THIRTY-EIGHTH TABLE.

Fig. 1.



Portion of the Liver Boyl'd and View'd with a Microscope.

A, The Outward Membrane of the Liver Rais'd and Pinn'd out.

B B B, The *Lobuli* compos'd of small Glands, of Various Figures and Sizes.

C, The Membranes continued from the Blood-Vessels, which divide the *Lobuli* from each other.

DD, The Blood-Vessels, of which some are Broken off.

EE, The Gall-Ducts, many of which are in like Manner Broken off as they Arise from the *Lobuli*.

Fig. 2.

A, A Branch of the *Vena Cava*.

aa, Its Extremities within the Liver.

B, A Branch of the *Vena Porta*.

bb, Its Extremities in like Manner not join'd with the former, says *Bidloo*. In preparing the Liver to Inject its Blood-Vessels with Wax, I found such a Communication between the *Vena Cava* and *Porta*, that I could by no means but Conceive the Extremities of those Vessels are continued Channels; for by pouring Water or Spirit of Wine into the *Vena Porta*, with the assistance of a Tunnel only, I found it soon run out again by the *Vena Cava*: Nor do's the Extremities of the Arteries of the Liver seem less Communicative with the *Vena Cava*; for by Syringing Water into the Hepatick Arteries, it easily pass'd into the *Vena Cava*, or *Porta*. In Blowing into the Hepatick Arteries or Gall-Ducts, I commonly find the Lympheducts of the Liver Distended with Wind.

Fig. 3.

The Gall-Bladder and its Ducts.

A, The *Ductus Cysticus*.

B, The Internal Membrane of the *Ductus Cysticus* Appearing after Raising the External: This Internal Membrane is much Larger than the External, by which means it Frames divers Valves or *Rugae* in the Cavity of this Duct. These *Rugae* (which some call Valves) prevent the perpetual Effusion of the Bile into the *Duodenum*: Nor do they Oppose the Retrocession of the Gall by the Cystick-Duct, as some pretend; for if you either Blow, or Inject Water into the *Ductus Communis*, the Gall-Bladder soon becomes Distended. In Examining the Gall-Ducts of a Lamb's Liver, I clearly Discover'd divers Ducts of Gall Arising from the Liver, and emptying themselves into the *Ductus Cysticus*: Nor could I by any means observe in that Subject any Gall-Ducts Arising from the Liver, and Discharging their Contents into the Gall-Bladder at its Neck, as some pretend. I have more than once emptied the Gall-Bladder of a Humane Body, and made a Ligature on the *Ductus Cysticus* some Distance from its Neck, and afterwards forcibly Distended the Hepatick-Ducts with Wind, but could by no means Raise the Gall-Bladder: I have also made the same Experiment in Quadrupeds with Mercury, by Injecting it by the *Ductus Hepaticus*, but could not find it come into the Gall-Bladder immediately; but in the *Ductus Cysticus* about a Quarter of an Inch from the Gall-Bladder, I have seen the Mercury Arise from Two or Three Gall-Ducts proceeding from the Liver.

C, The *Ductus Hepaticus* cut from the Liver.

D, Part of the *Ductus Communis*.

Fig. 4.

A A, The Gall-Bladder partly Open'd.

B, A Portion of the *Meatus Cysticus*.

CC, Divers Blood-Vessels Propagated between the Gall-Bladder and Liver, which *Bidloo* takes to be some of the Lesser Cystick-Ducts.

D, One of the Larger of the last mentioned Vessels, which *Bidloo* in like Manner Describes as One of the Largest of the Cystick-Ducts, with its Orifice E F, looking into the Gall-Bladder.

Fig. 5.

The Blood-Vessels of the Liver and Gall-Ducts Injected with Wax, and free'd from their Extremities which compose the Glands. This Scheme or Distribution of these Vessels may be prepar'd after the following Manner. The whole Liver being taken out with the Trunks of its Blood-Vessels left to it of a convenient length; wash out the Blood from its Vessels by Syringing of warm Water into Them: This done, fill the Blood-Vessels with Spirit of Wine or Alum-Water, or Inject them with Oyl of Turpentine a little warm'd. After some Hours, dip the whole Liver in hot Water, and Inject Wax of a different Colour into all its Blood-Vessels and Secretory-Ducts; the Arteries being fill'd with Red; the *Vena Porta* with a Dark Colour; the *Vena Cava* of a Distinguishable Colour; and the Gall-Ducts with Yellow Wax: This done, free the Liver of its Outward Membranes, and with your Fore-Finger begin to divide the *Lobuli* from each other, by thrusting it thro' the Glandulous Surface even to the Trunks of

the Large Blood-Vessels. The *Lobuli* of the Liver being very much divided, dip the whole in warm Water, and with a stubbed Brush, made of the stiffest Hogs-Bristles, begin to Brush off the Glandules of the Liver from the Extremities of the Injected Blood-Vessels. In doing of this be Cautious, lest you break off the Large Trunks of the Injected Vessels, always remembring to begin at the Surface of the Glands, and after the Extremities of the Injected Vessels are clear'd, than proceed to their Larger Branches and Trunks. If due care is taken in managing this Preparation of the Vessels of the Liver, you will find them more Numerous than this Figure Represents.

A, The Right Side of the Liver.

B, The Left.

CC, The Larger Trunks of the Hepatick Arteries Injected with Red Wax.

ccc, The Branches of the Arteries which do Accompany the *Vena Porta*, and Hepatick Gall-Ducts.

D, The Trunk of the *Vena Cava* fill'd with Green Wax.

EE, A Portion of the Diaphragm.

F G H, The Three Large Branches of the *Vena Cava* within the Liver, lying towards its Superior and Convex Surface, and not Associating with the *Vena Porta* and other Vessels, framing Acute Angles in their Intersecting those of the *Porta*.

g h i, The Lesser Branches of the *Vena Cava*.

K, The Trunk of the *Vena Porta* cut off, after being Injected with White Wax.

L L, Parts of the *Capsula* which includes the *Vena Porta*, Hepatick Arteries, and Gall-Ducts together.

1, 2, 3, 4, 5, The Large Branches of the *Vena Porta*.

M, The Gall-Bladder.

N, The Roots of the *Ductus Cysthepatici*, according to *Bidloo*.

O, The *Ductus Cysticus*.

P, The *Ductus Hepaticus*: p, their Branches.

Q, The *Ductus Communis*.

R, Part of the *Ligamentum Umbilicale*.

S, The *Canalis Venosus* between the *Vena Porta* and *Cava*, become a Ligament.

T, Parts of the Hepatick Nerves.

V, Some of the Lympheducts of the Liver Marching on the *Capsula* of the *Vena Porta*.

Hence it Appears the Liver is a Glandulous Body compos'd of Blood-Vessels, Excretory-Ducts, Nerves and Lympheducts. The Vessels which Import Blood into it, are the *Vena Porta* and *Arteria Hepatica*; at their Extremities Arise, or are Continued, the Branches of the *Vena Cava*: Nor are the Extremities of the Blood-Vessels of the Liver equally lessen'd like the Veins and Arteries of other Parts, as the above mention'd Experiment of pouring Water only into the *Vena Porta*, and its running out by the *Vena Cava* do's Evince; or by gentle Syringing Water by the Hepatick Arteries, and its easily passing by the *Vena Cava*; so that the Extremities of the Hepatick Blood-Vessels seem to be largely Inosculated with each other, especially the *Vena Porta* with the *Cava*. The Gall-Ducts Arise from the Extremities of the Blood-Vessels, and tho' they Communicate immediately with the Blood-Vessels, yet Liquors convey'd into the *Vena Porta* and the like, do not so readily pass into these Ducts as the other Blood-Vessels; because the *Orifices* in the Sides of the Blood-Vessels whence those Ducts Arise, are much less than the Pore of those Vessels themselves. Besides the Blood-Vessels of the Liver, which are furnish'd with Pores for the Secretion of the Gall, there are still other Branches of the same Vessels which Administer a proper Nourishment to the Gland it self. By the *Gland it self*, I mean the *Parietes* of those Vessels which compose the Liver: For I cannot conceive the Liver to be any thing else then a *Compages* of Vessels more or less Distended. As there is a proper Nourishment due to the *Gland it self*, so it is Necessary, that besides its Secretory-Ducts, the Liver should be also furnish'd with Lympheducts, to carry off the Redundancy of its Nutritive Juice, continually supplied by the Arteries; but of this elsewhere. The Nerves are necessary in the Liver, as they are in all Parts where Membranes are Useful; not because they Import any Liquor as some conceive, as an Ingredient to the Matter separated; but by the Nerves the Tone of Parts is in a great Measure maintain'd; for if the Nerves are Relaxt, the Parts to which they belong, suffers an *Atrophia*, tho the Blood has its free Accession to the Part as before; but of this also in another Place.

In Dissecting a Morbid Body which before Death was much afflicted with Hypochondriack Pains, I found the Liver very much lessen'd, and its Surface uneven, not unlike a heap of small Bullets. In Dissecting the Body of a Noble-Man afflicted with the like Pains, I found that Part of the Liver which Appears below the Cartilaginous Endings of the Ribs, of a Livid Colour, and the whole somewhat Lessen'd, the Gall-Bladder very much Contracted, and fill'd with Two or Three small Stones; the *Peritonaeum* on the Parts adjacent being much Thickened, and its Blood-Vessels Turgid. In the Body of a Young Lady (reduced to a *Marasmus* from a Scrophulous Indisposition) I found the whole Surface of the Liver very Black. In a Person who is now Living, and in tollerable Health, I could Three Years since discover (by feeling the Right *Hypochondrium*) the Lower Part of the Liver exceedingly Tumified and Hard; which is now intirely Vanish'd.

T H E THIRTY-NINTH TABLE.

Fig. 1.



A R T of the *Jejunum* or Hungry Gut, together with a Portion of the Mesentery, &c.

A A, The Surface of the *Jejunum* Cover'd with its External Membrane continued from that of the Mesentery, it being produc'd from, or a continuation of the Internal *Lamina* of the *Peritonaeum*.

BBB, The *Vasa Lactea* not Extended, being here Express'd by simple Lines only, as they pass from the Intestines thro' the Mesentery.

The Lacteal-Vessels carry both *Chyle* and *Lympha* Promiscuously, and have a Two-fold Origin; the One from the Extremities of the Arteries; the Other from divers *Ostiole* in the Cavities of the Guts: The Former Appears not only by Injecting of Mercury by the Arteries of the Mesentery D, and its passing into the Lacteals B; but when these Milky-Vessels are not employ'd in conveying of *Chyle*, they are constantly charg'd with *Lympha*: The Latter Origin of these Milky-Tubes from divers *Ostiole* in the Cavities of the Guts, Appear in their receiving of *Chyle* from thence. The *Lympha* from the Arteries meets with the *Chyle* at the beginnings of the Lacteal-Vessels, by which means its Progress towards the next Lymphatick Gland is promoted: The *Vasa Lactea primi generis*, Arise with Capillary Branches very much Divided, and become United into large Trunks, in the Mid-way between the Intestine and Lymphatick Gland; and are sometimes again Divided before their Entrance into the *Vesiculae* of the Gland. The *Chyle* and *Lympha* thus receiv'd into the *Vesiculae* of the Mesenterick Glands, there meets with other *Lympha* brought into those *Vesiculae* by the Arteries; whereby the *Chyle* is not only more diluted, but its Ascension towards the *Vesicula Chyli* is promoted, by its receiving a fresh *Impetus* from the *Lympha* so mixing with it. Thus we may conceive the Progress of *Chyle* towards the *Receptaculum Commune* is carri'd on, by means of the *Lympha* joining with it in its several Stages thither. Nor would the Valves of the Lacteal-Vessels be of any considerable Use, if the *Chyle* did not receive an Additional *Impetus* from the Arteries in their supplying it with fresh *Lympha*, as well in the Lymphatick Glands, as at the Beginnings of the *Vasa Lactea primi generis*.

C, The External Membrane of the Intestine Rais'd and Pinn'd out.

CC, The Muscular Membrane of the Intestine lying immediately under the External Membrane consisting of a Longitudinal and Circular Order of Fibres.

DD, The Mesenterick Arteries Propagated to the Intestine.

EE, The Veins which Arise from the Extremities of the Arteries, and discharge the Refluent Blood into the *Vena Porta*.

F, A Branch of the Mesenterick Nerve made bare.

GG, The *Vasa Lactea primi generis*.

H, The External Surface of the Intestine Adorn'd with Blood-Vessels.

II, The Glands of the Mesentery into whose *Vesiculae* the *Vasa Lactea primi generis* Import their Contents, as aboves noted; whence the *Vasa Lactea secundi generis* Arise, and convey their Contents in like manner, either into the *Receptaculum Chyli* immediately, or into the *Pancreas Asellii*. Tab. 40. L, Fig. 1.

Fig. 2.

A Portion of the *Jejunum* dri'd after being Distended with Wind, whereby its *Valvulae Conniventes*, fram'd by the looseness of its Inward Membranes Appear as here Represented.

A B C D, The Various Disposition of the Valves in the Cavity of the Intestine; some of them taking up near Two Thirds of the Circumference of the Inside of the Gut, A, Inferior: Others B D, about a Fourth Part; whilst others are Semicircular.

As the Upper Part of the *Duodenum* next the *Pylorus* is Furnish'd with large Valves, so they gradually Decrease in the small Guts as well in Magnitude as Number, as they approach the Lower Parts of those Intestines towards the *Colon*: Hence the *Valvulae Conniventes* of the *Duodenum* are very Large; that at the *Pylorus* being Circular; The Valves of the *Jejunum* less; those of the *Ilium* still less; inasmuch, that the Lower Part of this Gut next the *Colon* scarce affords any Appearance of them: See Fig. 3.

These Valves are compos'd of the Internal Membranes of the Intestines, which being much larger then the Exterior, are necessarily laid up in Foldings, and Frame these Parts. These Connivent Valves hinder the quick Descent of the Contents of the Intestines, lest the *Chyle* as well as the Excrementitious Parts should escape the Mouth of the Lacteal Veins.

Fig. 3.

A Portion of the *Ilium* dri'd after Inflation.

AA, The External Surface of the Intestine.

B, The Internal ———

CC, The Valves of this Intestine much less then in the *Jejunum*.

D, That end of the *Ilium* next the *Jejunum*.

EE, That next the *Colon*.

Fig. 4.

The Beginning of the *Colon*, Extremity of the *Caecum*, together with a Portion of the *Ilium* dri'd after Inflation.

A A, The *Caecum* Adorn'd with its Blood-Vessels.

BB, The *Colon* plac'd in the Right *Iliac* G G, Tab. 33. and C, Tab. 40.

CC, Its Blood-Vessels Injected with Wax.

D, A Portion of the *Ilium* as it enters the Beginning of the *Colon*.

Fig. 5.

The same Parts of the *Colon*, *Ilium*, and *Caecum*, Express'd in the precedent Figure, Open'd to shew the Valves of the *Colon*, and the entrance of the *Ilium* into the *Colon* as they Appear after Inflation and drying them.

A, The Valve at the Orifice of the *Caecum* in the *Colon*.

BB, The *Colon* Open'd to shew its Inside.

CC, The Blood-Vessels Injected with Wax.

D, Part of the *Ilium* before it enters the Cavity of the *Colon*.

EE, The End of the *Ilium* which hangs down loose into the Cavity of the *Colon*, as Appear before drying of the Guts, which here Frames an Appearance of a Connivent Valve.

F, The Orifice of the *Ilium* Opening into the *Colon*.

By this Contrivance we may easily conceive how the Excrements, when they have pass'd the Small Guts into the *Colon*, cannot return again: A likeness of which, may be imitated if you take a Piece of Gut and put One End of it into the Neck of a Bottle, and tying the other end of the Gut on the Outside of the Nose of the Bottle, filling the Bottle with Water by that Gut; and tho' you afterwards turn the Nose of the Bottle downwards, yet no Part of the contain'd Water can come out, till it has so Prest out the end of the Gut in the Bottle that it becomes Inverted. This may serve to give us an *Idea* how it may happen in this Part when the Excrements are rejected by the Mouth in Cholick and Iliack Passions.

GG, The large Valves of the *Colon*, which like those of the small Guts are partly Fram'd by the Looseness of the Internal Membrane of the Gut; and are here in the *Colon* chiefly made by a Corrugation or Folding of the Membranes of the Gut it self, by means of its Ligaments, Tab. 40. Fig. 1. D, and Tab. 54. dd. These Ligaments of the *Colon* are truly Flethy Fibres, and I am apt to think are capable of contracting themselves and promote the passing on of the Contents of this Gut. When the Ligaments of the *Colon* are divided, the Foldings of it which help to compose its Valves, are loos'd, and the whole Gut becomes almost plain without any Inequalities. As the Ligaments of the *Colon* Descend towards the *Rectum* they begin to Expand themselves, and at length Frame an External Membrane for the *Rectum*.

HH, The Internal Concave Surface of the Cells of the *Colon*.

III, The External Convex Surface of the Cells of the same Gut.

Fig. 6.

A Portion of the *Rectum* with Part of the Mesentery continued to it.

A A BB, The External Surface of the *Rectum*, on which the Ligaments of the *Colon* compose a Tegument, whose Fibres are very strong, and are Extended according to its Length.

CCDD, The Fatty Appendages, whose Extremities have divers Figures.

E, The Mesentery.

FG, The Trunks of the Blood-Vessels.

Fig. 7.

The *Rectum* Divided according to its Length, and Expanded to shew its Inside.

A B, &c. The Internal Tunicle of the *Rectum*, which being much larger than the External, necessarily Appear in many Folds in this Position. This Internal Tunick of the *Rectum* is compos'd of a vast Number of Glands, to which divers Blood-Vessels belong; of these, the Veins are considerably Large and are commonly fill'd with Blood, by reason of their Position and the Blood Ascending directly in them; whence it happens they become very much Distended when the Blood do's not readily pass on in their Superior Trunks; or when any sharp Humor Affects this Membrane, these Veins become Tumified, and sometimes discharge their Blood, and are call'd *Hæmorrhoides Aperte*; if no Blood flows from those Tumified Veins, they are call'd *Hæmorrhoides Cæcæ*. The Glandules employ'd in separating a Matter to Lubricate the Inside of the *Rectum*, and cause the Excrements, tho' very much harden'd to pass off easily, are in this Case also very much Swell'd, and a great Quantity of *Mucus* flows from them: Hence the whole Inward Membrane of the *Rectum* becomes much Thickned, and when prest down beyond the Stricture of the Sphincter Muscle of the *Anus*, it is call'd *Procidencia Ani*. Tho' it is commonly suppos'd the Outward Membrane of the *Rectum* as well as the Internal, is driven out in a Common *Procidencia Ani*; yet the following Case seems to evince the contrary, and that it is the Internal Membrane of the *Rectum* only that is then Prolaps'd.

A Gentleman of about Twenty Seven Years of Age, had for several Years been very much Afflicted with the *Hæmorrhoides* and a *Procidencia Ani*, who after a sudden Debauch had a great Inflammation and Tumor Affect'd the *Anus*, attended with great Pain: In the space of Twelve Hours, the Parts about the *Anus* Appear'd of a Livid Colour; soon after a Mortification follow'd. The Sphincter Muscle of the *Anus* being Relaxt, a *Procidencia Ani* follow'd; the Prolaps'd Intestine (being expos'd to the Matter which flow'd from the Adjacent Parts) soon suffer'd Mortification. The Patient after some Weeks recover'd his usual Strength, and in a few Months became perfectly Well. Nor did any inconveniency follow by reason of the Mortification of the Prolaps'd Intestine; but on the Contrary, He continued Well, and was free'd not only from the Habitual *Hæmorrhoides*, but was afterwards free'd from a *Procidencia Ani*.







T H E FORTIETH TABLE.

Fig. 1.



THE Trunk of the Body lying in a Supine Posture, and some of the *Viscera* of the *Abdomen* Expos'd to View.

A A, The Common and Proper Integuments of the *Abdomen* Dissected.

B, The Under-side of the *Omentum* as it Appears when Rais'd and remaining Contiguous to the *Colon*.

C C, The *Colon* at its Beginning in the Right *Ilium*, and in its Progress over the Right Kidney, by the *Pylorus* and under the Bottom of the Stomach: The farther Progress of this Intestine is commonly so well Describ'd, that we need not say more of it in this Place.

cc, The *Cæcum*.

D, That Part call'd One of the Ligaments of the *Colon*, which we take to be Compos'd of Fleishy Fibres, &c.

E E, The *Intestina Tenuia*, or Thin Guts, which are the *Duodenum Jejunum*, and *Ileum*; to these some add the *Cæcum*.

F F, The *Intestina Crassa*, or Thick Guts, are the *Colon* and the *Rectum*; to these the *Cæcum* is commonly reckon'd.

G H I, The Mesentery to which the Intestines are Contiguous. The Mesentery is Compos'd of divers *Strata* of Membranes, the outwardmost of which, on both Sides of it, is a Continuation of the Internal Membrane of the *Peritonæum*; between these are plac'd divers Membranaceous *Loculi*, which Inclose its Glands K K: This Internal Part of the Mesentery is by some Esteem'd as a Third Membrane proper to this Part. The Rise or Connexion of the Mesentery to the Stable Parts, is at the Three Superior *Vertebrae* of the Loins on both Sides the *Arteria Magna*, where it sends out the *Arteria Cœliaca* and *Mesenterica Superior*. Besides Blood-Vessels, the Mesentery is plentifully furnish'd with Lympheducts and Nerves; the Latter are well Describ'd by Dr. *Willis* and *Vieusænius*; the Lympheducts are mention'd in the precedent Table; its Arteries are Figur'd in our *Appendix*; its Veins Correspond to them, and discharge their Blood into the Liver by the *Vena Porta*.

K K, The Glands of the Mesentery thro' which the *Chyle* and *Lympha* passes to the *Receptaculum Chyli*.

L, A Large Gland of the Mesentery near the *Receptaculum Chyli*, call'd by *Asellius*, *Pancreas*.

M M, The Fat which in Humane Bodies is commonly very plentifully plac'd between the Membranes of the Mesentery. In some Quadrupedes, especially in Dogs, the Fat only Accompanies the Trunks of the Blood-Vessels of the Mesentery.

Fig. 2.

This Figure is Copied from *Bourdon's* Third Table, Fig. 1.

A A A, The Mesentery in which its Vessels and Glands are here only Exprest.

B B, The Intestines.

C D, The Glandules of the Mesentery, thro' which the *Chyle* and *Lympha* pass together from the Intestines to the *Receptaculum Chyli*. C D, Those Glands which receive the Contents of the *Vasa Lactea Primi Generis*; F, That plac'd near the *Receptaculum Chyli* which receive the Contents of the *Venæ Lactææ Secundi Generis*. A A, Inferior, Denote the *Venæ Lactææ Primi Generis*. A, Superior and E, Represents the *Venæ Lactææ Secundi Generis*. E, Superior, Part of a Lympheduct Arising from the Spleen.

G, Part of the *Receptaculum Chyli*, or the Beginning of the *Ductus Thoracicus*.

H, The *Arteria Mesenterica*.

I, The *Vena Mesenterica*.

A further Description of the *Receptaculum Chyli* and *Ductus Thoracicus*, is Inserted in the *Appendix*, Fig. 11, 12.

Fig. 3, 4.

Shew the different Insertions of the Thoracick-Duct into the Lower Side of the Left Subclavian Vein; which in these Figures are Erroneously Exprest in the Right Subclavian.

E E, The Subclavian Veins.

F F, The Thoracick-Ducts.

Fig. 5, 6.

A B B, One of the Lacteal-Vessels Blow'd up and Dri'd, in which the Valves Appear at a greater Distance from each other, then in a Lympheduct prepar'd in the same Manner, Fig. 6.

T H E
FORTY-FIRST TABLE.



HE W S the rest of the *Viscera* as they Appear within the Cavity of the *Abdomen*, after the Intestines together with the Mesentery, are remov'd.

A A, The Lower Parts of the Kidneys. It's well known the Kidneys are those Parts which separate the Urine from the Blood; whence it is Convey'd by the Ureters into the Bladder of Urine. Concerning the Structure of the Kidneys; See *Tab. 43.*

B B, The Ureters partly Cover'd with Fat, in their way from the Kidneys to the Bladder of Urine.

C, The Bladder of Urine somewhat Distended.

D D, The Spermatick Vein and Artery on both Sides Involv'd with Fat and Membranes, as they pass towards the Testicles.

E, The Right Side of the *Scrotum*, with the Testicle of that Side remaining in it. This Right Side of the *Scrotum* is Divested from the Left by a *Suptyum Intermedium*, mention'd by the Accurate *Ruyfch.*

F, The Left Testicle taken out of the *Scrotum*.

G, The Bottom of the Stomach *in Situ*.

H H, The Liver *in Situ*.

I, The *Pancreas* as it Appears in its Proper Situation after the Intestines are remov'd.

K, A Portion of the *Duodenum* cut off and tied below the Infertion of the Gall and Pancreatick Ducts.

L, The Lower Part of the *Rectum* in like Manner tied up.

M, Part of the Mesentery according to *Bidloo*.

N, The Descending Trunk of the *Arteria Magna*.

O, The Ascending Trunk of the *Vena Cava*.

P, The Internal Surface of the *Peritonæum*, as it Appears when Divided in a Crucial Manner, together with the Common and the rest of the Proper Integuments of the *Abdomen*. In the Upper Part of this Appearance of the *Peritonæum*, the *Fibres* of the *Musculus Transversalis* may be seen as they lie under it.

Q Q, The Fat withinside the Skin.

R R, The Superior and Inferior Parts of the *Musculus Rectus Abdominis*, Divided as above Noted.

S, The Lower Part of the Spleen *in Situ*.

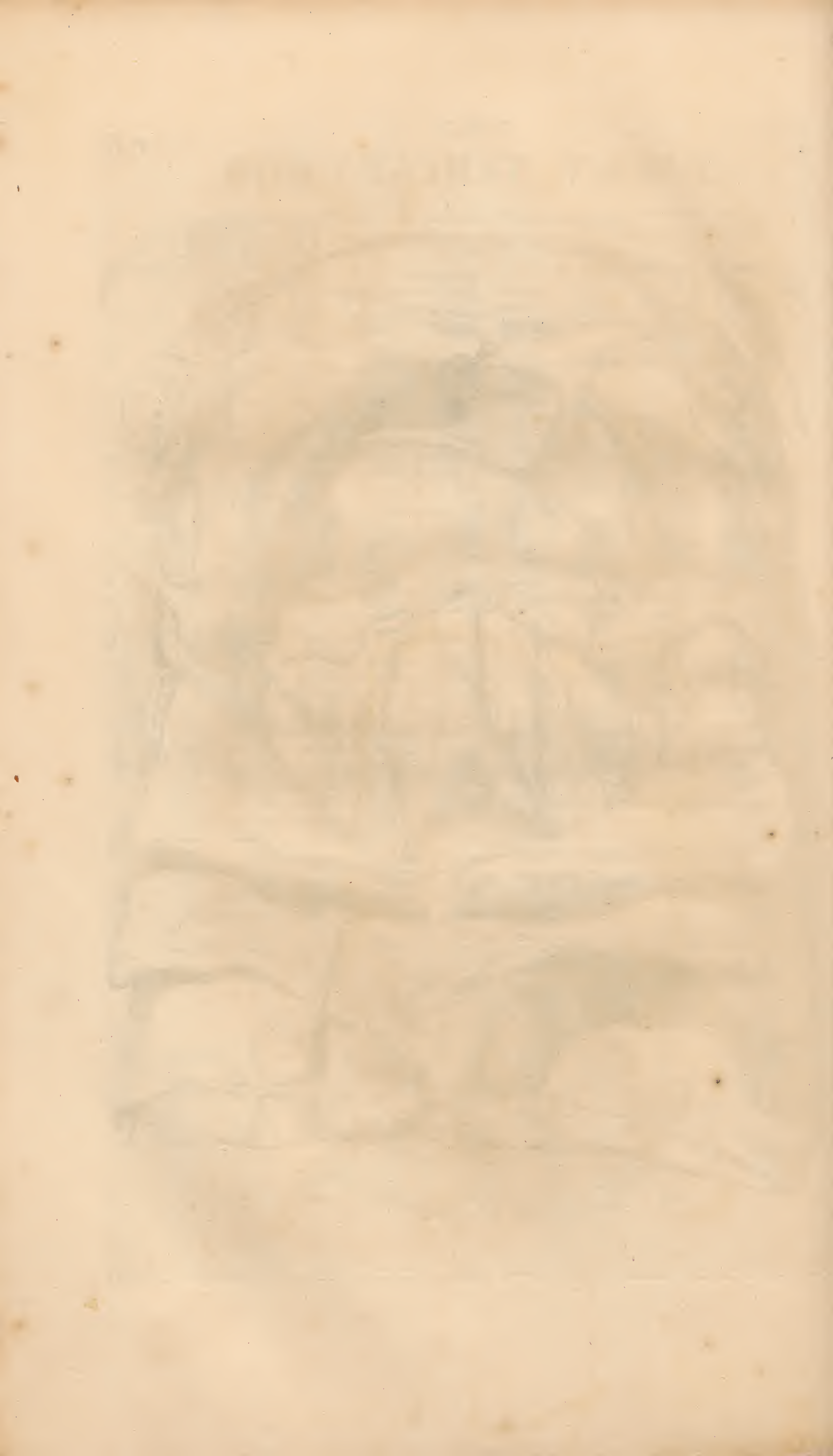
T, The Trunk of the *Arteria Mesenterica Superior* cut off near the *Aorta*.

V, A Portion of the *Arteria Mesenterica Inferior* in like Manner Divided.

W, The Umbilical Ligament of the Liver turn'd Upwards, and not free'd from its Inclosing Membranes.







THE FORTY-THIRD TABLE.

Fig. 1.



H E External and Inferior Side of the Left Kidney.

A A B B, The Proper Membrane of the Kidney covering above Two Thirds of its Body : The Superior Part of the Kidney being free'd from its Membrane, some *Vestigia* of its *Lobuli* (when in the *Fœtus*) do Appear.

C, The Emulgent Artery Pinn'd out.

D, The Emulgent Vein Pinn'd out.

E, The *Ureter*, and its Expansion within the Kidney, call'd the *Pelvis*, made bare.

Fig. 2.

A A, The Concave Part of the same Kidney Represented in the former Figure, Open'd, to shew the Ramifications of its *Pelvis*.

B B, The Blood-Vessels.

C C, The *Ureter* and its *Pelvis* Branching within the Body of the Kidney. A piece of a Tobacco-Pipe being Inserted to the Superior Branch of the *Pelvis*.

Fig. 3.

Half of the Kidney when Divided according to its Length.

A A, The External Convex Surface and Glandulous Part of the Kidney.

B B C C, The *Tubuli Urinarii* Arising from the Glands of the Kidney in their Way towards the *Papillæ*.

D, Half of the *Pelvis* Expanded, so that the Beginning of the *Ureter* from it may be seen.

E, The *Ureter* hanging down.

F, The Blood-Vessels of the Kidney.

The Proper Membrane of the Kidney is here Pinn'd out.

Fig. 4.

The Kidney Divided thro' its whole Length, from its Back to the *Pelvis*.

A A, The Urinary Tubes as they Appear in divers Clashes, in their Way towards the *Papillæ* in the *Pelvis*.

B C, The Glands and Urinary Tubes Interspers'd with the Blood-Vessels of the Kidney.

D, The *Pelvis* or *Infundibulum* Open'd, so that the going out of the *Ureter* may be seen.

d, The *Ureter*.

E E, The *Caruncule Papillares* compos'd of the Endings of the Urinary Tubes, which open into the Branchings of the *Pelvis*, into which the Urine is discharg'd, in Order to its being transmitted to the Bladder of Urine by the *Ureter*.

e e, The Fat within the Kidney lying on the *Pelvis*.

Fig. 5.

The Blood-Vessels and Urinary Tubes of the Kidney Exprest by a Microscope.

A, The Proper Membrane of the Kidney.

B B, The Ends of the Blood-Vessels broke off.

C C, The Blood-Vessels of the Kidney which help to compose its Glands.

D D, The Glands of the Kidney compos'd of Blood-Vessels, Urinary Tubes, Nerves and Lympheducts.

The Nerves of the Kidneys as well as of other Glands in the *Abdomen* furnished with Excretory Ducts, are very few, and their Trunks very small; nor do's any exquisite Pains affect the Kidneys themselves, tho' Stones compos'd

of divers Angles are lodg'd in their Glandulous Parts; but the Parts whose Nerves are Complex with those of the Kidneys, suffer most in such Cases. Tho' we reckon the Nerves among the Parts which compose the Glands of the Kidneys, yet we cannot think they are any otherwise Useful here, than Subservient to the other Vessels which are immediately imploy'd in the Secretion of the Urine, as the Blood-Vessels and Urinary Tubes; which are the Parts Organiz'd for Separating the Urine from the Blood. Nor are the Lympheducts otherwise imploy'd here than we have elsewhere taken Notice of, as in the Liver; to carry off Part of the *Succus Nutritivus* which is constantly convey'd to the Gland it self. How these Parts are Organiz'd, the following Experiments may a little Inform us.

If you Blow into the Emulgent Artery, the Wind will pass into the Vein of that Name, *Ureter*, and Lympheducts; the like will happen if you Blow either into the *Ureter* or Emulgent Vein. If you Inject Mercury, all these Vessels will in like Manner be Distended. If you Syringe Water into the Emulgent Arteries, it will at first pass the Veins and *Ureter*; but if you continue Injecting it for any time, the whole Kidney will at Length become Distended, and the Water will no longer pass off again by those Vessels. Hence it Appears the Blood consisting of Globular Bodies, (Proportionated to the Magnitude of the Extremities of the Vessels moving in the *Serum*) readily pass on by a Succession of *Globules* still driving others before them; whilst the Urinary Tubes (as they Arise with small Orifices from the Sides of the Extremities of the Blood-Vessels) receive the Thinner or Urinous Part of the Blood, and Discharge it into the *Pelvis* of the Kidney. In the Body of a Person of the First Rank I lately Dissected, I found the Left Kidney Large, its Texture very Loose; and by Blowing into its *Ureter*, the Emulgent Vein very suddenly became Distended: In this Person among other Disorders, he had near Twenty Years before his Death, very Feculent Urine: If his Urine was Evaporated by Heat as in a Spoon over a Candle, its Feculent Part became still thicker; by which it appear'd the Nutritious Parts of the *Serum* of the Blood as well as the Urinous Part, pass off by the too great Laxity of the Urinous Pores in the Sides of the Blood Vessels in the Kidney.

E, The Urinary Tubes in their way from the Glands to the *Papillæ*.

F, The Extremities of the Blood Vessels which Compose the Glands of the Kidney.

G, The Urinary Tubes Composing the *Papillæ*, where their Mouths open into one of the Branches of the *Pelvis*.

H, A Branch of the *Pelvis* cut off.

Fig. 6.

A A, The Internal Concave Part of the Kidney opened.

B, Part of the *Ureter*.

C, The *Pelvis* free'd of the Kidney.

D D, The Branches of the *Pelvis* within the Kidney also made bare.

E E, The Urinary Tubes which Arise from the Extremities of the Blood Vessels of the Kidney, and open into the Branches of the *Pelvis*, Composing the *Papillæ*.

Fig. 7.

The *Ureter*, *Pelvis* and its Ramifications free'd from the Kidney and dried.

A, Part of the *Ureter*.

B, The *Pelvis* or Beginning of the *Ureter* lying within the Body of the Kidney.

CD, The Ramifications of the *Pelvis* cut from the *Corpora Papillaria*, or Endings of the Urinary Tubes.



Fig. 3.

Fig. 4.

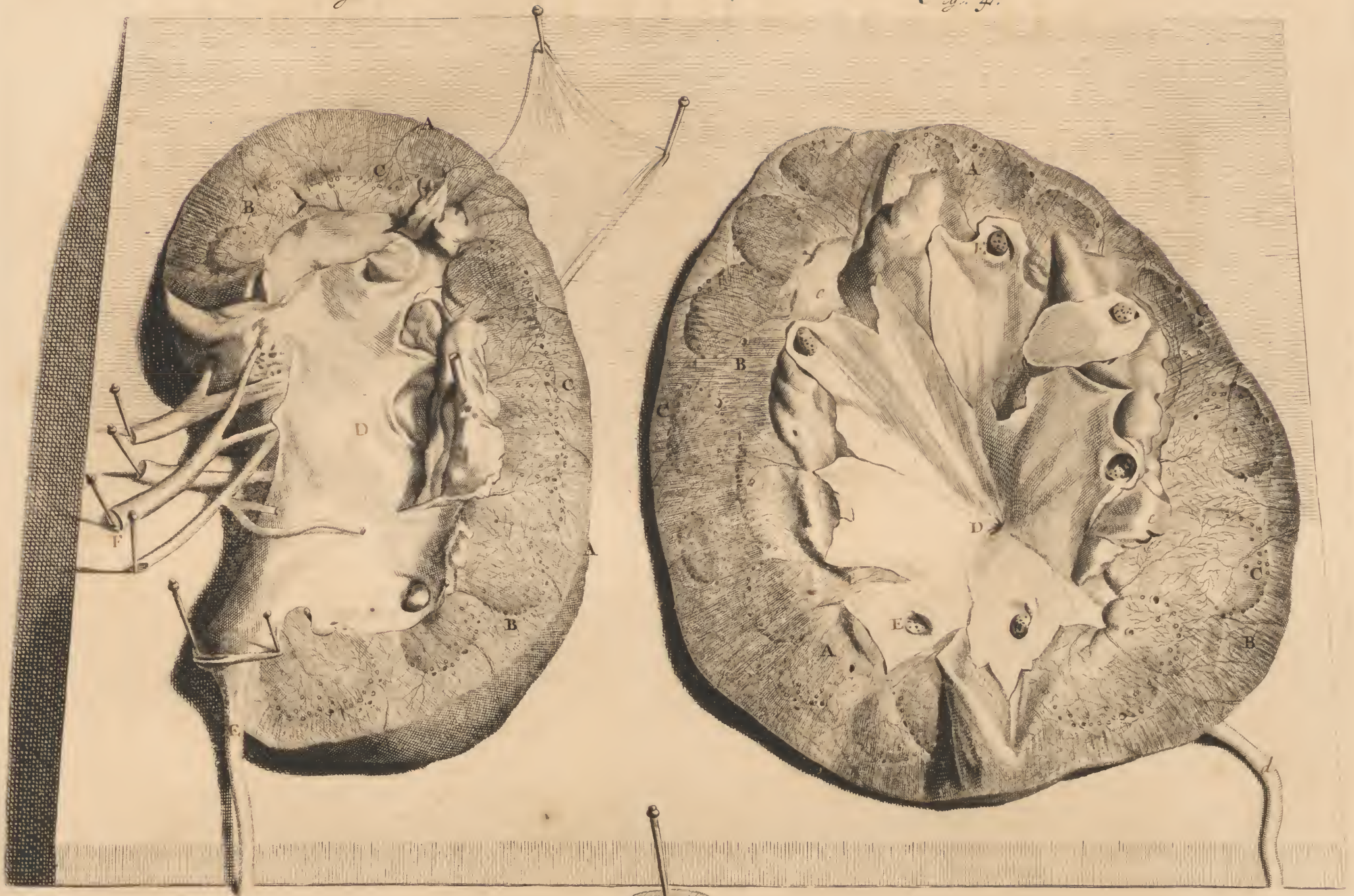


Fig. 1.

Fig. 2.

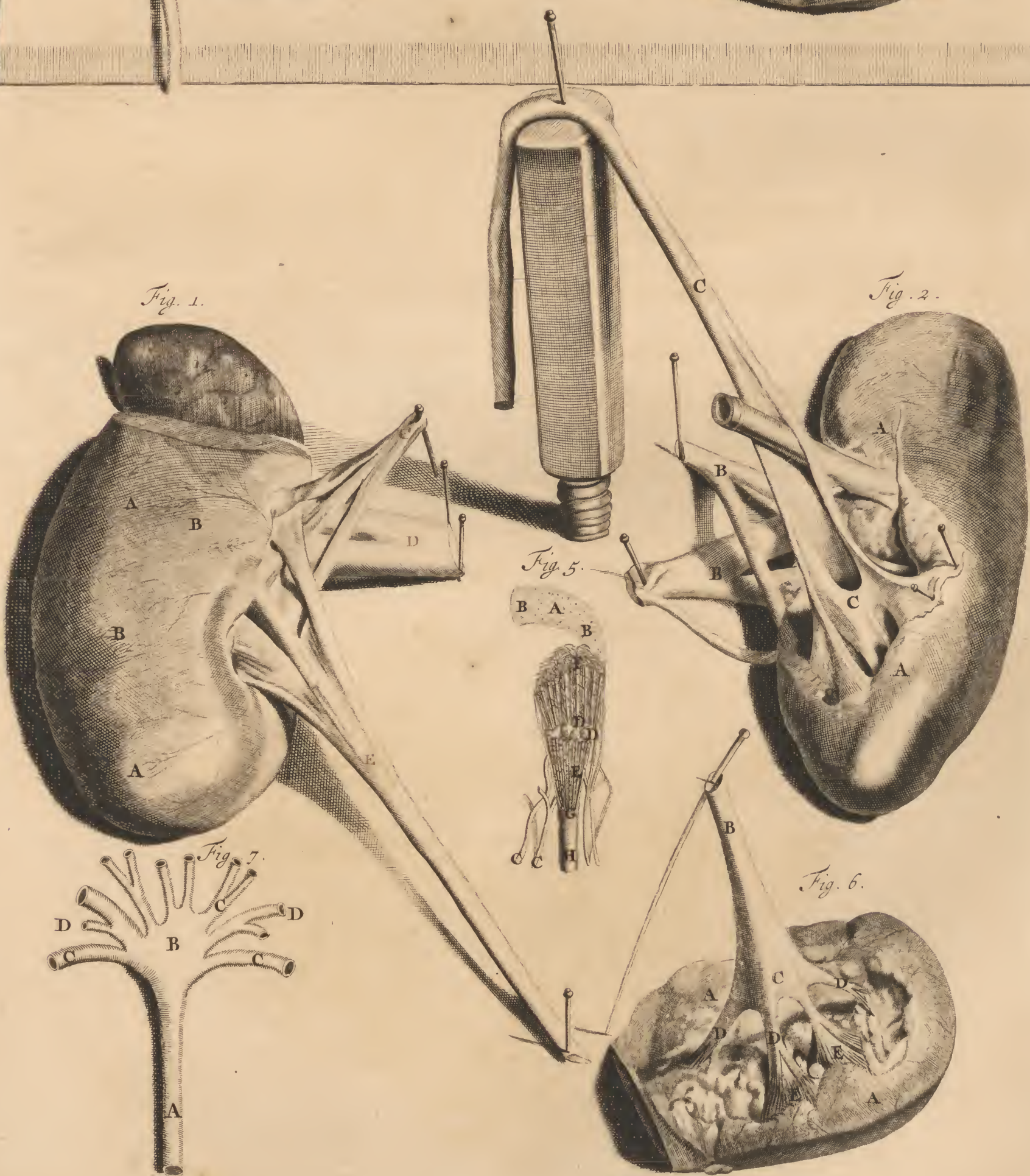




Fig. 2.



Fig. 1.

T H E FORTY-FOURTH TABLE.

Fig. 1.



HE Membranes of the Ureter View'd with a Microscope.

AAA, &c. A Portion of the Ureter cut off near the Bladder and Expanded ;

B, Its Exterior Membrane.

CD, Its Membranaceous Fibres running according to its Length, fill'd with Fat.

E, The Second Membrane or *Lamella* of the Ureters, consisting of Oblique Muscular Fibres Intersecting each other.

F, The Blood-Vessels lying between this and the First Membrane.

H, The Third or Internal Membrane of the Ureter, compos'd of Fibres much Looser and standing at greater Distances, than those of the Former.

II, Divers Glandules which Appear in this Membrane, and Emit a *Mucus* to Defend the Ureter from the Acrimonious Salts of the Urine.

Fig. 2.

The Inferior or Back-part of the Bladder of Urine, &c. together with the *Penis*.

AB, &c. Portions of the Ureters in their Tortuous Progress to their Oblique Insertions, between the Exterior and Inferior Membranes of the Bladder.

CC, The Bladder of Urine cover'd with Fat, as it is commonly found in Humane Bodies.

The Bladder of Urine may be said to be a Dilatation of the Ureters ; the intimate Structure of the Membrane of both agree, except that the Muscular Fibres of the Bladder are Stronger and Larger than those of the Ureters ; the Superior and Largest of them embracing the Bladder, like a Hand, as *Spigelius* compares them ; the Internal are Less, and Decussate the Superior with Various Angles : Some Anatomists reckon these among the Muscles, and call them *Detrusores Urinae*. The Glands of the Bladder of Urine are also Larger than those of the Ureters, and are frequently Tumified as well as the Fibres in Diseas'd Bodies, especially in those who for some time have been Afflicted with a Stone in this Part, the Sides of the Bladder have been very much Thickned ; and by Compressing them a *Mucus* may be seen to Arise from its Internal Surface, thro' divers *Ostio-la* or Excretory Ducts. The Bladder is Situated in

the *Hypogastrium* in the Duplicature of the *Peritonæum* : When it's Inflated in the Body, it exactly fill's that Cavity of the *Abdomen*, call'd the *Pelvis* ; its Upper Part is Suspended by the *Utrachus*, which in some Animals would be liable to fall on its Neck and hinder the Evacuation of Urine.

The Use of the Bladder is to Receive the Urine from the Ureters, and Contain it till the Time of Excretion ; whence it's Squees'd out partly by its own Carnous Fibres, but chiefly by the Muscles of the *Abdomen*.

D, That Part of the Urethra that is Bended under the *Os Pubis* in its Proper Situation, and is plac'd between the Sphincter Muscle of the *Anus* and *Prostatæ*. This Part of the Urethra is liable to be Wounded, and sometimes Perforated by too hastily Introducing the *Conductor* into the Bladder, after an Incision is made in the *Perinæum* in Cutting for the Stone ; whereby the Operator afterwards thrusts his *Forceps* between the Bladder of Urine and *Rectum*. This Inadvertency I am perswaded is very often Practis'd among the Pretenders to *Lithotomy*, and frequently proves fatal to the Patient. One would think it was hardly possible a Man in his Senses, and but tollerably acquainted with Anatomy, could commit such Errors ; yet of this I have met with more than one Instance, when being call'd to Dissect the Deceased, in whom such Operators have been so Unfortunate as to leave the Stone still in the Bladder.

E, The *Vasa Preparantia* or Blood-Vessels of the *Testes*, involv'd in the *Peritonæum*.

F, The Testicle. Between F and E.G, is that Part of the Spermatick Vessels, call'd *Corpus Pyramidale*, and *Plexus Pampiniformis* or *Varicosus*.

GG, The *Vas Deferens* Ascending from the Testicle to the *Vesiculæ Seminales*.

HH, The *Vesiculæ Seminales* Blow'd up by the *Vasa Deferentia* ; that of the Right Side having a Blow-Pipe still remaining in it.

I, The Back-Part of the *Prostatæ* or *Corpus Glandosum*.

KK, The Back-Part of the *Penis*.

LL, The *Musculi Directores Penis*, whose Origin, Progress, and Termination are Express'd Tab. 47. Fig. 5.

M, The Bulb of the Cavernous Body of the Urethra Devested of the *Musculus Accelerator Urinae*, Express'd in the last mention'd Table ; that Part of the Bulb towards the *Anus* being cut off ; its Internal Cavernous Part here Appears Depress'd, or drawn Inwards.



T H E FORTY-FIFTH TABLE.



Fig. 1.
S the *Testes* with its Vessels and Membranes when free'd from the *Scrotum*.

A, The Body of the Testicle.

B, Some Appearances of the *Musculus Cremaster* (according to *Bidloo*.)

CC, The *Tunica Vaginalis*;

D, Its Inferior Part cleaving to the Testicle;

E, Its Superior Part continued to the *Peritoneum*.

F, The Serpentine Distribution of the Blood-Vessels on the *Testes*.

G, That Part of the *Testes* next the *Epididymis*.

H, The *Epididymis*.

I, The *Vas Deferens* whose Thickness and Cavity is very truly Express'd at its Extremity.

J, A particular Vaginal-Tunicle of the *Vas Deferens*, which *Bidloo* says has Circular Fibres, but not here Express'd.

K, The Blood-Vessels of the Testicle call'd *Vasa Praeparantia*, as they Appear before any Injection or Inflation is made into them.

L, The Nerve of the Testicle.

Fig. 2.

The *Testes*, *Vas Deferens*, and *Vasa Praeparantia* Display'd, together with some Lympheducts of the Former.

A, The *Arteria Spermatica* continued from a Portion of the Descending Trunk of the *Arteria Magna*: I can't but suspect this Part of the Figure to be Erroneous, since in the many Subjects I have always observ'd the Origin of the Spermatick Artery to be very Small, even much Smaller than its Inferior Trunk; insomuch, that its Cavity Arising from the *Arteria Magna*, would scarce admit the Smallest Probe commonly us'd, it being but just Capacious enough to receive a Large Hogs Bristle.

aa, &c. The Ramifications of the Spermatick Artery in their Descent to the *Testes*.

B, The Trunk of the Spermatick Vein with a Portion of the *Vena Cava*, into which it Enters;

CDbb, &c. Its Various *Anastomoses* and *Retiforme* Inosculation, as it Ascends from the *Testes*.

EE, The Valves of the Spermatick Vein which look from below Upwards, and prevent the Descent of the Blood in that Vessel. Should it be askt why the Spermatick Veins in Humane Bodies, and the Arteries in Quadrupedes should have a Tortuous Progress towards the Testicles; and *Vice Versa* the Humane Spermatick Arteries and Veins of Quadrupedes should pass Straight? We answer, Tho' the Separation of the *Semen* in the Testicle is after the Manner of that of other Liquors in Conglomerate Glands, yet we constantly find in all Animals, that the Arteries of the *Testes* are Propagated from their Large Trunks at a considerable Distance from them; and those of the Conglomerate Glands, are always supply'd with Blood-Vessels from the next Neighbouring-Branch: And this Practice in Nature we can't at present Account for otherwise, than that the Blood in the Testicles should not pass with that

Velocity as it do's in other Glands; else what should be the Design of those many Turnings and Windings made in the Spermatick Arteries of most, if not all Quadrupedes? But that every Angle of their Contortions should take off the *Impetus* of the Impell'd Blood from the Heart. But the Subject of our present Animadversions here, offers an Objection. Why then are the Spermatick Arteries in Humane Bodies Straight, when their Progress is towards a Perpendicular Descent, upon the Account of the Erect Position of the Body? We answer, That the Descending Progress of the Blood might be a very good Argument of its Enjoying a freer Accession to the *Testes*; but we constantly Observe in all Humane Bodies, that the Spermatick Arteries are (as we have Intimated above) very Small at their Originals from the *Arteria Magna*, which is a sufficient Impediment to any great *Impetus* of the Blood from the Great Artery: Nor was this Contrivance in Nature necessary in Quadrupedes, because it would be an Impediment in them in providing that Requisite Stock of *Semen* to Impregnate the Female with her Numbers; or in regard a greater Proportion of *Semen* was in them necessary on the Account of the Length of the *Cornua Uteri*, which it must first pass thro', before it can Arrive at the *Fallopian Tubes* and *Ovaria*: Whence it is, that the *Testes* of Quadrupedes are much Larger in Proportion, than the Humane. But why the Humane Spermatick Veins are thus Divided and Inosculated with each other, when those of Quadrupedes are Straight and fewer Trunks, is Accountable from their Positions; those of Men being towards a Perpendicular Ascent to convey the reflux Blood; and those of Quadrupedes near Horizontal. From hence the Necessity of making one of these Blood-Vessels Varicous, do's Appear, especially the Humane Spermatick Veins; which, if had the Arteries been also, as in Quadrupedes; the Spaces or Perforations in the Muscles of the *Abdomen* for their Egress, must have been so Large, as that the Intestines would have been continually liable to an Extrusion.

F, Part of the *Epididymis*.

G, The Glandulous Part of the Testicle Devel'd of its Proper Membrane.

HH, The *Vas Deferens* partly free'd from the *Epididymis*, to Exhibit some of its Contortions.

I, The *Tunica Vaginalis* of the *Vas Deferens*.

K, The *Tunica Albuginea*, with some of the Glandulous Part of the Testicle Rais'd with it.

L, Part of the *Tunica Elythroides* or *Vaginalis*.

M, Some of the Lympheducts of the Testicle Pinn'd out.

Fig. 3.

Part of the *Vas Deferens* that Composes the *Epididymis*, done much bigger than the Life.

AA, Part of the Testicle.

BD, The Tortuous or Serpentine Disposition of the *Vas Deferens* in the *Epididymis*; in which Manner the whole Body of the *Epididymis* is Compos'd of that Vessel, or Secretory Duct of the Testicle.

CD, Another Separation of the *Vas Deferens* in the *Epididymis*.

E, The *Vas Deferens*.

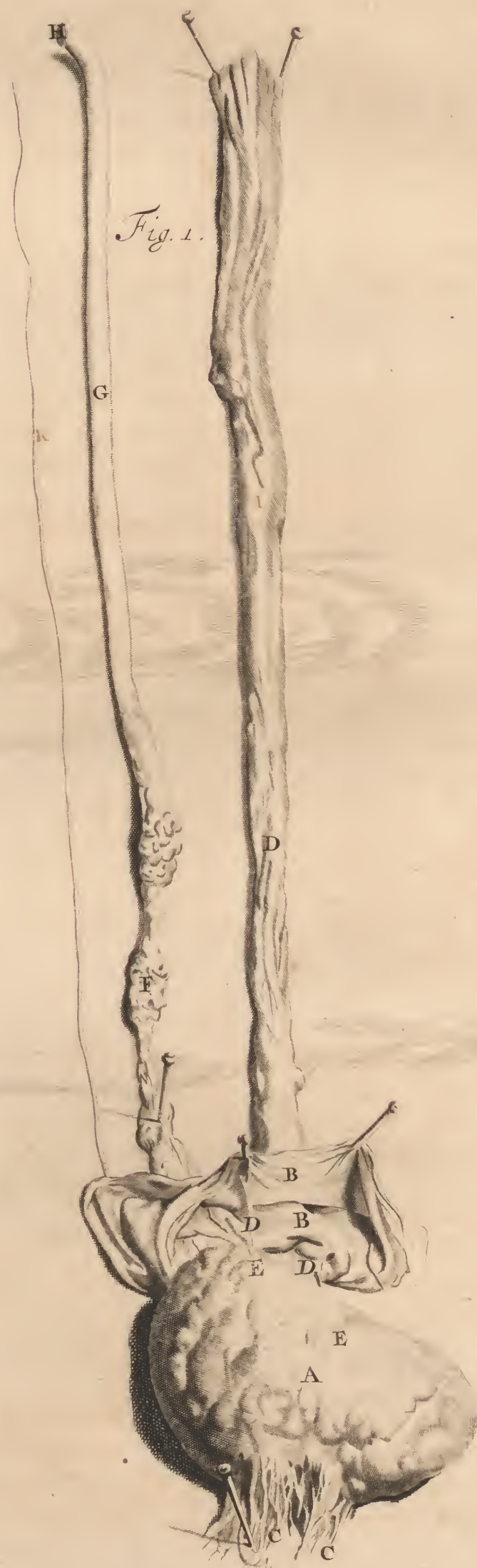
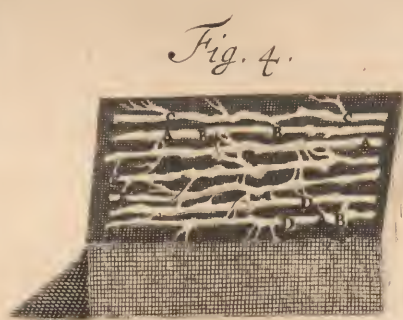
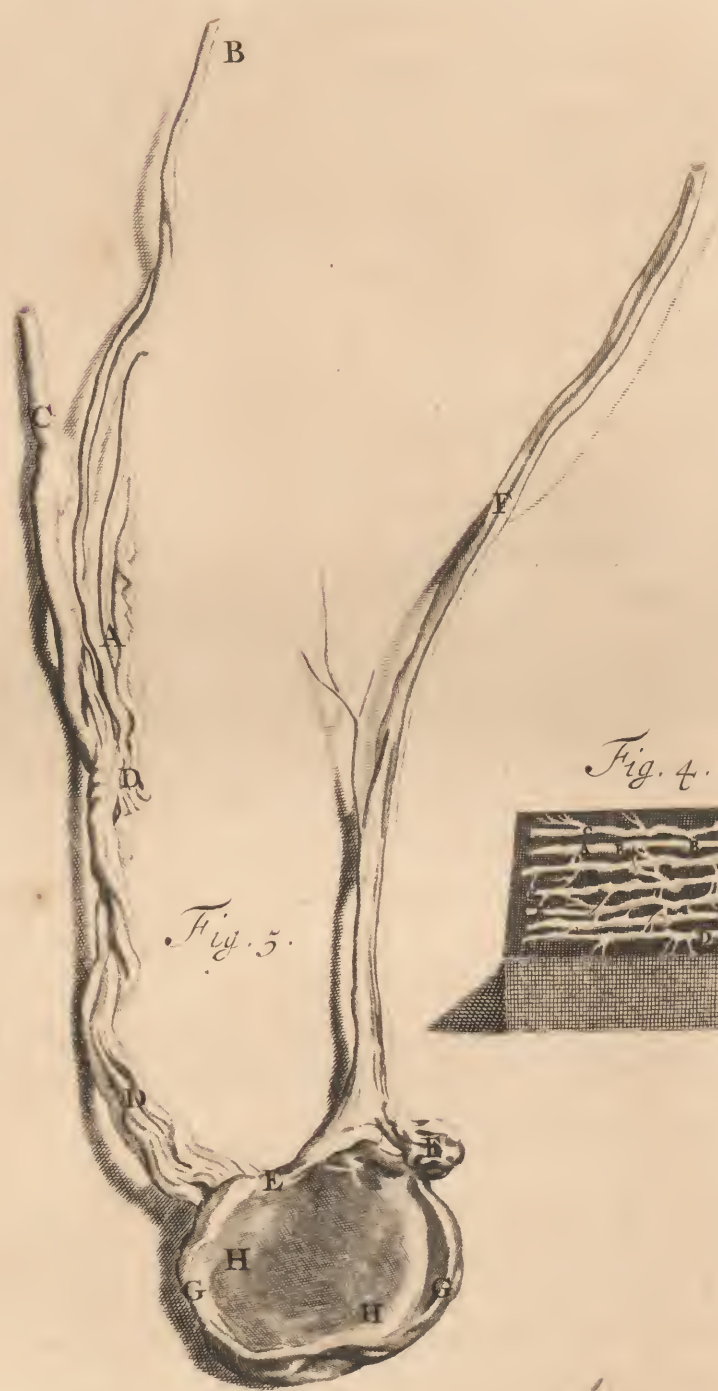
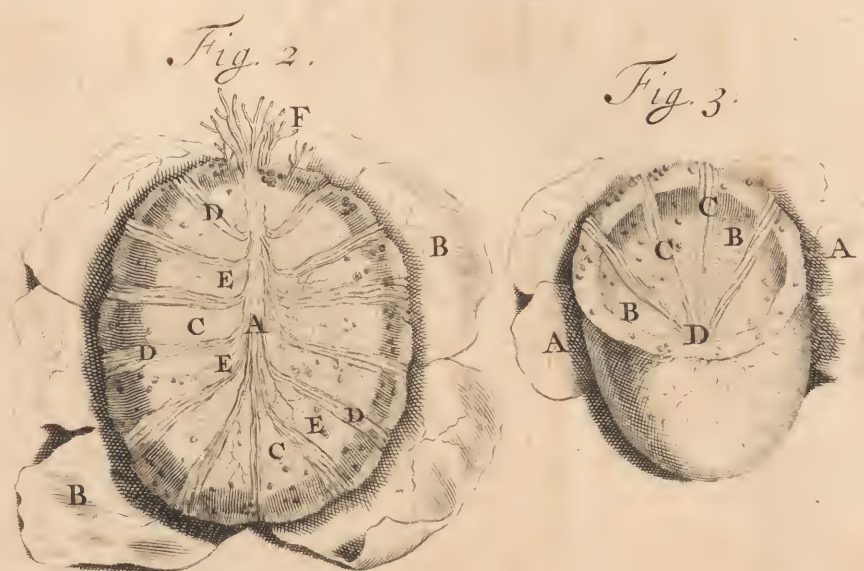
II, The *Tunica Vaginalis* of the *Vas Deferens* Compos'd of Circular Fibres according to *Bidloo*.

T H E



PLAN OF THE TOWN OF NEW YORK





T H E FORTY-SIXTH TABLE.

Fig. 1.



- A, H E Glandulous Part of the Testicle Devested of its Proper Integument.
 B B, The *Tunica Albuginea*, or Proper Membrane of the *Testes* Rais'd and Pinn'd up.
 C C, The Vessels of the *Testes* broken off in Raising the *Albuginea*.
 D E, &c. Some of the Blood-Vessels which Perforate the *Tunica Albuginea*.
 F, Part of the Foldings of the *Vas Deferens*, which Composes the *Epididymis*, made bare.
 G, The *Vas Deferens*;
 H, Its Cavity or *Ductus* which is very Conspicuous in all the Figures of the preceding Table, and not Letter'd.
 I D, The *Vasa Præparantia* or Blood-Vessels of the *Testes* involv'd in their Proper Membrane.
 K, The Nerve of the *Testes*.

Fig. 2.

- The *Testes* Devested of its *Tunica Albuginea*.
 A, The Seminal-Vessels of the *Testes* Collectively passing to their Egress, in Order to Compose the *Epididymis*.
 B B, The *Tunica Albuginea* free'd from the *Testes*.
 C C, The Glandulous Part of the Testicle.
 D D, The Seminal-Vessels or Tubes deriv'd from their Originals, in the Sides of the Arteries that Compose the Glands.
 E E, The Orifices made by breaking off of the Blood-Vessels as they pass thro' the *Tunica Albuginea*.
 F, The Seminal Tubes passing out of the *Testes*, which are afterwards United into one Trunk, whose Foldings, Turnings or Windings Compose the *Epididymis*; whence it's continued (as is Express'd in the preceding Figure) and call'd *Vas Deferens*.

Fig. 3.

- The *Testes* Dissected Transversely.
 A A, The *Tunica Albuginea* Rais'd.
 B B, The Glandulous Part of the *Testes* where some *Vestigia* of the Blood-Vessels Appear.
 C C, The Progress of the Seminal Tubes thro' the Substance of the *Testes*.
 D, Their Trunks Collectively passing towards their Egress, as in the Former Figure, which by some is call'd *Ductus Highmorianus*.

Fig. 4.

- The Vessels of the *Testes* Express'd with a Microscope according to *Bidloo*, whose Description take as follows. A, The Seminal-Vessels separated from each other. B, Their Cavities Swel-

ling in the Manner of Valves. C, The Blood-Vessels Accompanying the aforefaid Vessels, and Covering them with Glands. D E, The Fragments of the Small Membranes. I am apt to believe this Figure of the Seminal-Vessels of the *Testes* is Fictitious, or that it may be of the Seminal-Vessels of the *Epididymis*; for I am well assur'd the Seminal-Vessels of the *Testes* and their Blood-Vessels, can with no Art be so Display'd as *Bidloo* Describes these to be so Represented with a Microscope: But grant it was Practicable so to Display those Vessels, yet I am sure it is not possible to distinguish the Vessels which carry the *Semen* from those of the Blood; so that such a Description must be Precarious. The Experiments I have made in Examining the *Testes*, convince me that the Extremities of their Blood-Vessels which Compose their Glands, are much Less or more Tender than those of other Parts; whence it is, if you Inject Mercury by the Spermatick Artery, it will not pass back again by the Vein, as in the Kidneys and other Glands; but the Mercury upon pushing it Forwards, will sooner break the Extremities of these Vessels, and get out into the *Tunica Albuginea*, and Extend the whole Stone than return again by the Spermatick Vein: Nor could I ever find the Lympheducts fill'd with Mercury, upon Injecting it into the Spermatick Artery; but by Blowing into the Vein of that Name, the Lympheducts soon become Distended, as *Nuck* has also taken Notice in his *Adenographia Curiosa*, Pag. 53.

Fig. 5.

- A, The Blood-Vessels of the Testicle Injected with Wax, and not Separated from their Inward Membrane, deriv'd from the *Peritonæum*.
 B, The Spermatick Artery.
 C, The Vein.
 D D, The Spermatick Blood-Vessels above the *Testes* which are Distributed to the *Epididymis*.
 E, *Vasa Deferentia*; F, *Tunica Albuginea*; G, and to the Stone it self H. The Sixth Figure shews the other Side of the same Testicle and Vessels, which are Distinguish'd by the same Letters.

From what has been said, it Appears the *Vasa Deferentia* like the Secretory Ducts of other Glands, Spring from the Extremities of the Blood-Vessels of the *Testes*; and agreeable to the Length and Tortuous Progress of the Blood-Vessels of these Parts, so their Secretory Ducts or *Vasa Deferentia* are of a vast Length also, and Dispos'd in divers Foldings in Composing that Part call'd the *Epididymis*. The *Vasa Deferentia* thus Arising from the *Epididymis*, pass up Straight with the *Preparantia*: Soon after they are in the Cavity of the *Abdomen*, these Defereent Vessels leave the *Preparantia*, and Descend over the *Ureters* in the *Pelvis* of the *Abdomen*, between the Bladder of Urine and the *Rectum*; where they begin to Dilate themselves and Open into the *Vesiculæ Seminales*, as Appears in the following Table, Fig. 1, 2.

THE FORTY-SEVENTH TABLE.

Fig. 1.



SHOWS the Fore-parts of the *Penis*, *Glandula Prostatæ*, and *Vesiculæ Seminales*, &c.

AA, The *Vesiculæ Seminales*.

aa, The Blood-Vessels; BB, their Branches on the *Vesiculæ*.

C, The Membrane which covers the *Vesiculæ Seminales* and *Vasa Deferentia*.

D Superior, The *Vas Deferens* of the Left Side appearing very much enlarg'd before it enters the *Vesiculæ Seminales* of that Side.

DD Inferior, The *Vesiculæ Seminales* of the Right Side.

E, The Neck of the Bladder cut off at the Beginning of the *Urethra*.

FF, The Fore-Part of the *Prostatæ* divided to shew the Inside of the *Urethra*.

G, The *Caruncula* or *Caput Gallinaginis* on the Inferior or Back-part of the *Urethra*; as it appears when the Superior or Fore-part of the *Urethra* is divided.

HH, The Two Orifices of the Seed-Vessels, as they appear when the Upper Part of the *Caruncula* or *Caput Gallinaginis* is snipt off with a Pair of Sizars. The *Ostia Prostatarum* on both Sides the *Caruncula* do somewhat appear.

II, The Upper Part of the *Penis*, call'd *Dorsum Penis*, cover'd with its *Membrana Carnosa*, whose Fore-part with the True-skin, composes the *Præputium*.

KK, The *Corpora Cavernosa Penis* cut from the *Ossa Pubis*.

L, The Bulb of the Cavernous Body of the *Urethra*.

The Figure of the Cavernous Body of the *Urethra* differs very much from those of the *Penis*; That of the *Urethra* being less in its Middle, and Large at both Ends; whereas the *Corpora Cavernosa Penis* are Less at their Extremities, and Large in their Middles.

M, The *Glans* composing the other Extream of the Cavernous Body of the *Urethra*.

NN, The Nerves of the *Penis* pinn'd out.

OO, The Arteries of the *Penis*.

P, The *Vena Ipsius Penis* where it is Comprest by the Transverse Ligament of the *Os Pubis*, when the *Penis* is Erected.

Q, Part of the *Membrana Carnosa Penis* pinn'd out.

Fig. 2.

The *Vesiculæ Seminales* cut through after Inflation and drying them, to shew their Insides.

ABC, The Cells of the *Vesiculæ Seminales* so extended by Inflation, that the *Rete* or *Vesiculæ Minores* in their Insides do not appear.

DFE, The Insides of the *Vasa Deferentia* in like Manner so Extended by Inflation, that their *Vesiculæ Minores* do not appear.

G, The Two Seminal Ducts which discharge the *Semen* into the *Urethra*.

H, Part of the *Prostatæ*.

Fig. 3.

A, A, The *Corpus Glandulosum* or *Prostatæ* divided.

B, C, &c. Its Glandulous Inside.

DD, The Ducts of the *Prostatæ* which open into the *Urethra*, at the Sides of the *Caput Gallinaginis*, which are elegantly Express'd in the following Table, Fig. 1. K.

E, F, Part of the *Urethra*.

Fig. 4.

The *Prostatæ* blow'd up, their Excretory Tubes in the *Urethra* and dry'd.

A, A, The Exterior Membrane.

B, B, The Interior Membrane compos'd of more carneous Fibres than the former.

C, C, &c. Their Transparent Vesicles extended.

D, D, Some of the Vesicles broke up.

E, E, Other *Vesiculæ* that remain Hard and Extended.

F, F, Some Parts of the Ducts remaining Extended.

G, G, The Fragments of the Membranes.

Fig. 5.

The Muscles of the *Anus* and *Penis* in Situ.

A, B, C, D, The *Musculus Sphincter Ani*: The Figure and Situation of this Muscle is here well Express'd; tho' Part of it be frequently divided in Opening a Fistulous *Sinus* of the *Anus*, yet the remaining Part of it is sufficient for its proper Office of retaining the *Fæces*.

E, E, The *Levatores Ani*: The Origination of which Muscles are best seen after dividing the *Ossa Pubis*, to take out the Bladder of Urine with the *Penis*: They spring from the Internal Parts of the last mention'd Bones, and descend close over the *Corpus Glandulosum* or *Prostatæ*. The Hinder Parts of these Muscles derive their Broad, Thin, Flethy Beginnings from the *Ossa Ischii* and *Os Sacrum*; from these Places their Fibres descend to their Implantation, into the Lower End of the *Intestinum Rectum* in the *Anus*.

These Muscles have a Two-fold Office; first in drawing up the *Anus*, least it should be too much press'd upon by the *Fæces*; secondly they Compress the *Prostatæ* and *Vesiculæ Seminales* in *Coitu*, in Order to discharge their Contents or *Semen* into the *Urethra*.

F, F, The *Directores Penis* or *Erectores*: They arise Flethy from the Lower Margin of the *Ossa Pubis* where they are join'd to the *Ischii*; whence they ascend to their Implantations near the Beginnings of the *Corpora Cavernosa Penis*.

The Position of these Muscles renders them capable of pulling the *Penis* Inwards and Downwards; but by Means of a Ligament arising from the *Ossa Pubis*, which is fastned to the Upper Part of the *Penis*, they have a different Effect by drawing the *Penis* somewhat Upwards and Nearer the *Pubes*, whereby the great Vein on the *Dorsum Penis* is Comprest, and the Erection of the *Penis* Promoted.

G, G, The *Corpora Cavernosa Penis*.

H, H, The *Musculus Accelerator Urinæ* covering the Bulb of the Cavernous Body of the *Urethra*: This derives its Origin from the Upper-part of the *Urethra* L, Fig. 1. on both Sides, and encompassing the Bulb, meets on its Inferior Part, but after a considerable Progress on that Part of the *Urethra* in the *Perinaeum*; this Muscle divides its self and makes Two Tendinous Infections on both Sides the *Corpora Cavernosa Penis*, as is Express'd in this Figure.

Besides the Offices commonly ascrib'd to this Muscle of compressing the *Urethra* in driving out the Remains of Urine, and promoting the Ejaculation of the *Semen*, both which Actions are chiefly done by the last describ'd Parts of it, embracing the *Urethra*. It also Assists the *Musculi Directores* in promoting the Erection of the *Penis*, by compressing the Bulb whose contain'd Blood is then driven towards the *Glans*, in a greater Quantity than can immediately be discharg'd by the Veins of the Bulb; the *Glans* thereby suddenly becomes distended: But the Vigorous Action of this Muscle not continuing long, the Veins of the Bulb which were then compress'd, are again at Liberty to discharge the retain'd Blood, and the *Glans* suddenly Sinks: Whence it comes that the *Glans* is not always duly extended, when the *Corpora Cavernosa Penis* are Erected.

This Part of the Bulb and *Accelerator* Muscle, &c. are divided in *Lithotomy*, or Cutting for the Stone in the Bladder; Whence it happens that the Cicatrice of these Parts afterwards, often hinders a compleat Extention of the *Glans Penis* in an Erection. The like happen'd in a Patient I was not long since call'd to, who had a Fistulous *Sinus* in the *Perinaeum*, in whom I found this Bulbous Part of the Cavernous Body of the *Urethra* very much Indurated: Upon Enquiry he told me, When his *Penis* was Erected, the *Glans* remained shrivell'd and no Ways Extended: Nor could the *Corpus Cavernosum Urethrae* be extended, and therefore he could by no Means Ejaculate the *Semen* at the Time of Erection; but the *Semen* often came with the Urine.

I, The *Musculus Transversalis Penis* on the Left Side, that of the Right not being Letter'd; It Arises from the Knob of the *Os Ischium* immediately below the Origination of the *Musculus Director*, and passes transversly to the Superior Part of the Bulb of the Cavernous Body of the *Urethra*.

K, The *Glans* or *Balanus*.

L, The *Præputium*.

M, The *Frænum*.

N, The *Urethra* open'd





Fig. 1.



Fig. 3.



Fig. 4.



Fig. 2.

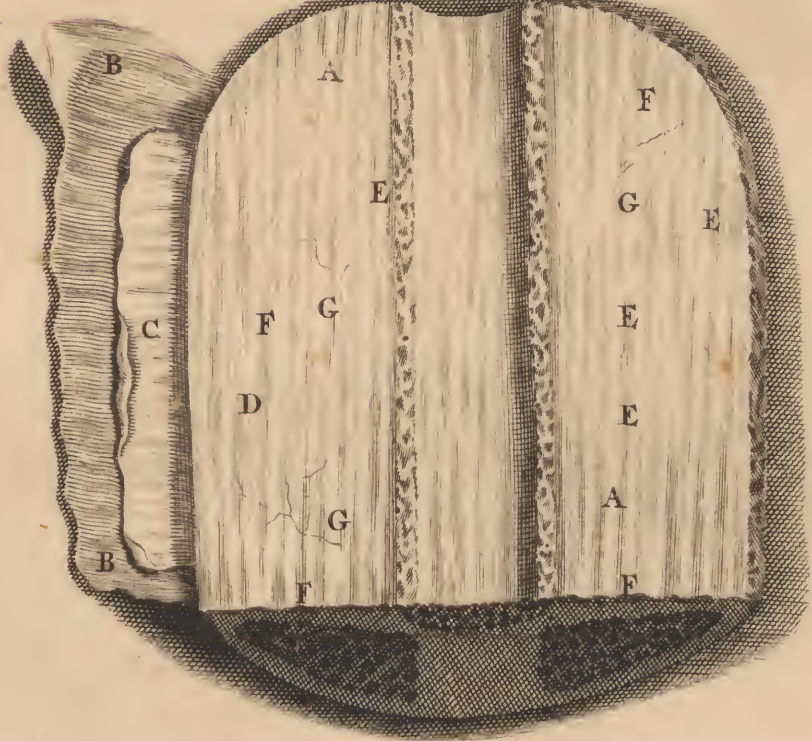


Fig. 5.

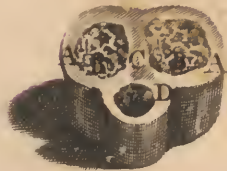
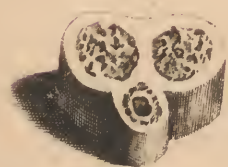


Fig. 6.



T H E FORTY-EIGHTH TABLE.

Fig. 1.



HE Upper and Fore-parts of the *Penis* and Bladder of Urine, well Exprest after a Curious Dissection.

AA, The Cavernous Bodies of the *Penis* Whole.

BB, That Part of the Skin which Composeth the *Præputium*.

b, The Reduplication or Inner Membrane of the *Præputium*.

CD, The Blood-Vessels which Adorn the Upper-part or *Dorsum Penis*.

E, The *Glans* or *Balanus*.

About the Neck of the *Glans* where the Prepuce is join'd to the *Penis*, are plac'd the *Glandulæ Odoriferæ*, taken Notice of by the Accurate Anatomist Dr. *Tyson*. These separate a Matter, which serves to Lubricate the Prepuce, and make it slide easily on the *Glans*. These Glandules of the Prepuce are frequently very much Tumified in Venereal Contacts, and especially if these Parts happen to be Ulcerated, whence a Fœtide Matter proceeds.

FF, The Urine Bladder Open'd.

GG, Parts of the Ureters next the Bladder.

HH, Portions of the *Vasa Deferentia*.

II, Parts of the *Vesiculæ Seminales* in View.

K, The *Caruncula* or *Caput Gallinaginis*, and *Ostiolæ Prostatarum* as they Appear after the Fore-part of the *Urethra* is Divided.

KL, The *Prostatæ* whose Upper-part is Divided with the *Urethra*.

M, The Vein of the *Penis* which is Compræst in an Erection, by a Ligament plac'd under the *Ossa pubis*.

NN, The Two Arteries of the *Penis*.

OO, The Nerves.

PP, The *Corpora Cavernosa* free'd from the *Ossa Pubis* and their *Musculi Erectores*.

QQ, Parts of the *Musculus Accelerator Urinæ* free'd from the Bulb of the Cavernous Body of the *Urethra*, and Expanded.

Fig. 2.

AA, Parts of the *Glans Penis* view'd with a Microscope.

BB, The Common Membrane of the *Penis* or *Præputium*.

CC, The Proper Membrane of the *Glans* separated.

DEFG, Divers Rows of Fibres dispos'd like Membranes, and Intricately interwoven with the Internal Membranes and Blood-Vessels.

Fig. 3.

The Fore-part of a Portion of the *Penis*, together with the *Glans* Dri'd after Inflation.

AAA, The Inner-parts of the *Corpora Cavernosa Penis*.

B, The *Septum* of the *Corpora Cavernosa*.

CD, The Cells of the Cavernous Bodies which Open into the Sides of the Veins, and are Sustain'd by the Fibres which pass to and fro' from the *Capsula* or Exterior Membrane of the *Corpora Cavernosa* and *Septum*. These Fibres are not so Conspicuous in the Humane *Penis*, as in that of a Horse: Nor are the Cells of a Humane *Penis* so Evident as they are in Quadrupedes: This Structure of the Cavernous Bodies of the *Penis* seeming to agree with the Spleen in the same Animal.

EE, The Arteries passing thro' the Middle of each Cavernous Body of the *Penis*.

After taking off the Tops of the *Corpora Cavernosa Penis*, from a Patient who had the *Glans* very much Ulcerated, I could easily take hold of the Ends of the Bleeding Arteries with my Forceps, and pass a Ligature on their Trunks, and Tie them; which Practice in such Cases is Preferable to the Application of Stypticks which cause Pain.

F, The *Glans*.

G, The Orifice of the *Meatus Urinarius* in the *Glans*.

Fig. 4.

The Hinder-part of the *Penis* in like Manner prepar'd by Inflation, &c.

AA, A Portion of the *Capsula* of the Cavernous Body of the *Penis* cut, and rais'd up; on which Part of the *Rete* of the *Corpus Cavernosum* do's Appear.

B, The *Corpus Cavernosum*.

C, The *Urethra* Open'd.

D, The *Corpus Cavernosum Urethræ* Divided.

E, The remaining Part of the *Urethra* and its Cavernous Body entire.

F, The *Glans Penis*.

Fig. 5, 6.

The *Corpora Cavernosa Penis* and that of the *Urethra*, after a Transverse Section when Inflated and Dri'd.

AA, The *Capsula* or Strong Membrane of the Cavernous Bodies of the *Penis*.

BB, The *Corpora Cavernosa Penis*; in the Middle of each of which the Trunks of Two Arteries pass according to their Length.

C, The *Septum*.

D, The Strong Membrane or *Capsula* of the *Corpus Cavernosum Urethræ*.

E, The Circular Cavernous Body of the *Urethra*.

A particular Account of the Structure of this Part is Inserted in an *Appendix* to our *Myotomia Reformata*; where the Lympheducts of the Humane *Penis* are Describ'd, and some *Phænomena* relating to them Explain'd: Since the Writing of which, I have had an Opportunity of seeing the Lympheducts on the *Penis* of a Dog, where I Observ'd by Blowing into the Veins, the Lympheducts were immediately Distended.

T H E
FORTY-NINTH TABLE.



HE W S the Cavity of the *Abdomen* of a Woman after the Intestines, Mesentery, &c. are remov'd.

AA, The Internal Part of the *Peritonæum*, together with the Common and Proper Integuments of the *Abdomen* after a Crucial Section.

B, The Right *Fallopian* Tube of the *Uterus* somewhat Rais'd from within the *Pelvis* of the *Abdomen*.

C, A Portion of the *Intestinum Rectum*.

D, The Bladder of Urine *in Situ*.

E, The *Pubes*.

F, The *Arteria Magna* with its Iliac Branches lying on those of the *Vena Cava*.

G, The *Vena Cava*.

H, The Stomach supported with a *Stylus*.

I, The Liver *in Situ*.

K, Part of the Spleen.

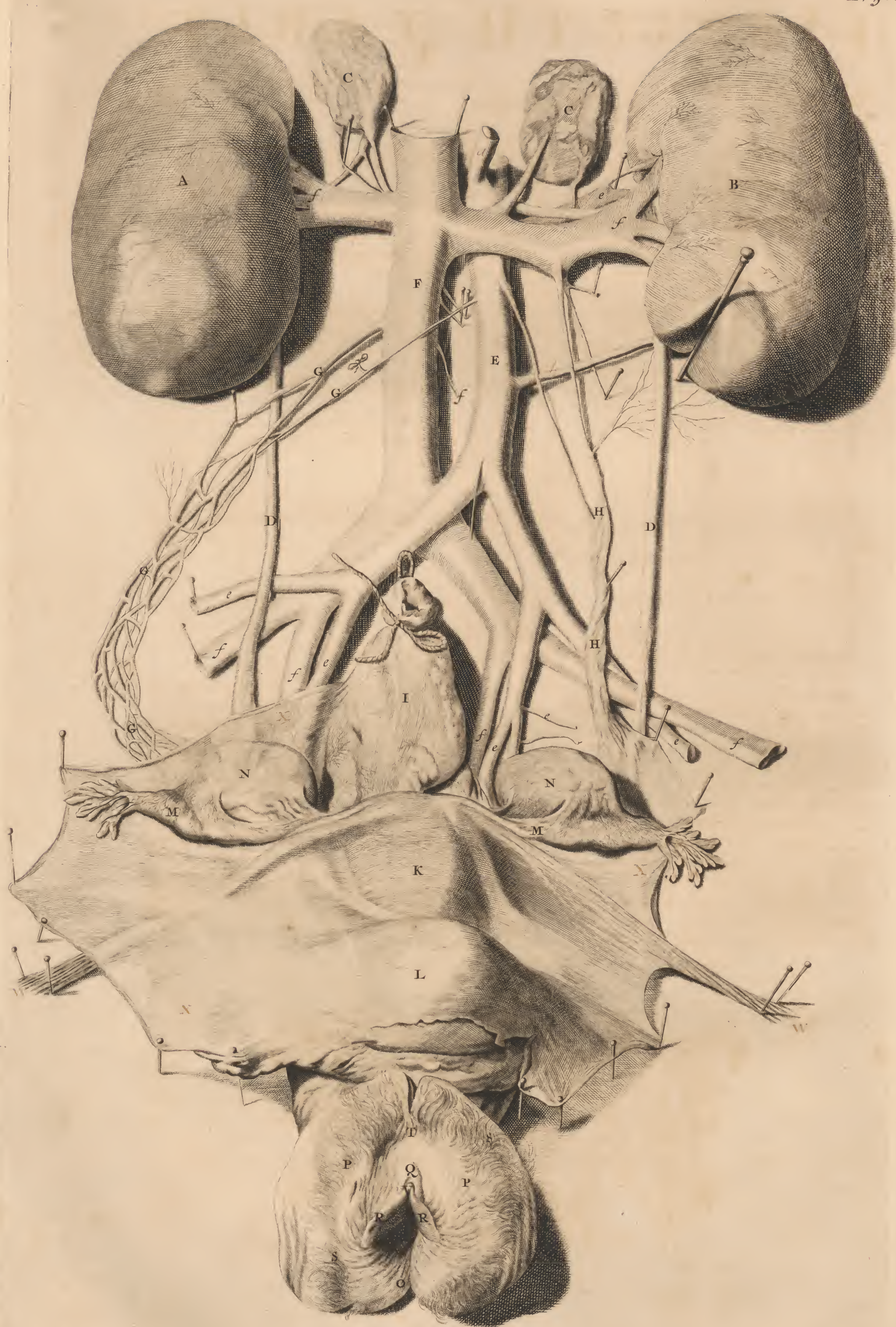
L, Part of the Left Kidney.

MM, Parts of the *Musculus Psoi Magni*.

N, The *Ligamentum Venosum Umbilicale* Turn'd up.







T H E F I F T I E T H T A B L E.



REPRESENTS the Parts of Generation in a Woman Curiously Dissected, and plac'd in their Natural Site.

A, The Right Kidney.

B, The Left Kidney.

CC, The *Glandulæ Renales* with their Blood-Vessels.

E, The *Arteria Magna*.

DD, The Ureters.

a, The Trunk of the *Arteria Mesenterica Superior* cut off.

b, The Trunk of the *Arteria Mesenterica Inferior*.

e e, &c. The rest of the Branches of the Great Artery; of which the Su-

perior are the Emulgents, the Inferior the *Iliaci Externi*, and *Interni*.

F, The Ascending Trunk of the *Vena Cava*.

fff, The Various Ramifications of the *Vena Cava*; whereof the Superior are the *Emulgentes*, the Middle the *Vertebrales*, the Inferior the External and Internal Iliac Branches.

GG, The Spermatick Artery and Vein in their Progress to and from the *Ovaria* Blow'd up, and Separated from each other on the Right Side.

HH, The Spermatick Artery and Vein of the Left Side, still remaining within their Coverings.

I, A Portion of the *Intestinum Rectum* Tied.

K, The *Fundus Uteri* lying under the Internal Membrane of the *Peritonæum*.

L, The Bladder of Urine, in like Manner, under the Internal *Lamina* of the *Peritonæum*.

MM, The *Tubæ Falloppianæ* Adorn'd with their Blood-Vessels.

mm, The Cavities of the Falloppian Tubes.

NN, The *Ovaria*.

nn, The *Fimbriæ* of the Falloppian Tubes which Embrace the *Ovaria* after Impregnation, as Appears *Tab. 53. B. C. Fig. 1.*

O, The Orifice of the *Vagina* or *Pudendum*.

PP, The *Labii Pudendi*.

Q, The *Præputium Clitoridis* made by the *Nymphæ*.

RR, The *Nymphæ*.

T, The Upper-part of the *Pudendum* towards the *Mons Veneris*.

V, The Extremity of the *Clitoris* call'd *Glans*, cover'd with the *Nymphæ*.

WW, The *Ligamentia Teretia* continued to the *Fundus Uteri*, and Pinn'd out.

Tho' these Parts have obtain'd the Name of Ligaments, yet their Structure and Composition differ very much from the Ligaments of other Parts, which are Hard, Dry and very Compact Bodies; whereas these Round Ligaments of the *Uterus* are Compos'd of a great Number of Veins and Arteries; the Nerves and Lympheducts are also said to Enter into their Composition: They Appear to be very Extensible Parts, and are Coextended with the *Fundus Uteri* after Impregnation: They are Broad towards the *Fundus Uteri*, and gradually Lessen themselves and become Round as they Approach the *Pubis*, where they Terminate under the Fat: They pass thro' the Muscles of the *Abdomen*, not unlike the Spermatick Vessels in Men, whence Women are sometimes liable to have a *Hernia Intestinalis*; but the Perforations of the Muscles not being so Large as in Men, those Ruptures do not so often happen in Women.

XX, &c. A Large Portion of the Internal *Lamina* of the *Peritonæum* covering the Surface of the *Fundus Uteri*, Bladder of Urine, *Ovaria* and the like: This by some is Erroneously call'd the *Ligamentum Latum Uteri*. Nor is there any such Ligament belonging to the *Uterus*, unless this Part of the *Peritonæum* may be so call'd.



T H E FIFTY-FIRST TABLE.

Fig. 1.



H E *Clitoris* and Parts annex'd, Dissected.
A, The Upper Part of the *Clitoris* with its Veins, which are compress'd by the *Ligamentum Transversum* of the *Os Pubis* in the Time of Coition, in like Manner as the Vein of the *Penis* is in its Erection.
B B, The Two *Crura Clitoridis*, which arise from the *Ossa Pubis*, where they appear Porous.

C C, Parts of the *Labia Pudendi*.

D, The *Glans Clitoridis*.

G G, The *Nymphae* which compose the *Præputium Clitoridis*.

H, The *Meatus Urinarius*, or Passage of Urine.

E E, The *Musculi Eretores Clitoridis*, which arise from the External Margin of the *Os Ischium*, and are Inserted to the Beginnings of the *Corpora Cavernosa* of the *Clitoris*: Their Office is to draw the *Clitoris* to the *Ossa Pubis*, in Order to stop the Refluent Blood in its large Vein, whence the *Clitoris* like the *Penis* becomes Extended. By these Means the *Clitoris* is not only Dilated, but the *Labii Pudendi* are in like Manner Extended by Two Cavernous Bodies or *Retia* of Blood-Vessels plac'd on each Side the Orifice of the *Vagina* externally. These are accurately describ'd by *Reg. de Graaf de Mulierum Organis*, *Cap. VII.* and call'd *Plexus Retiformis*.

F F, Parts of the *Musculus Sphincter Vaginae* left at the Extremity of the *Clitoris*. The Circular Fibres of this Muscle Encompass the *Vagina* on the Retiform Plexus, and Compress its Veins, (which discharge their Blood into the Vein of the *Clitoris* A.) By which Means the Plexus is fill'd with Blood, and the External Orifice of the *Vagina* (about the *Carunculae Myrtiformes*) is straighten'd and adequately embraces the *Penis* in a Mutual Coitus.

Fig. 2.

Part of the *Clitoris* cut off after Inflation and Drying.

A, The little Head or *Glans Clitoridis*.

B, Its Proper Membrane or *Capsula*.

C, Its Cavernulous Contexture.

D, Its *Septum*.

Fig. 3.

The *Pudendum* and Fore-part of the *Vagina Uteri* Open'd.
A, Part of the *Vagina*, which lies under the Bladder of Urine.

B B, The *Vagina* and *Meatus Urinarius* divided.

C C, The *Corpus Glandulosum* or Part Analogous to the *Prostata* in Men, divided.

D D, The *Ductus Secretorii* or *Lacunæ* of *De Graaf*, within the Gland, which have divers *Ostiola* about the *Meatus Urinarius*, whence Issues Part of the Matter emitted in Coitu.

Besides these Ducts arising from Glands plac'd about the *Meatus Urinarius*, there are others of the same Kind in the *Vagina*, and Two remarkable ones arising from Two very conspicuous Glands, plac'd towards the Lower Part of the *Orificium Pudendi* by the *Anus*, whose Ducts open at the Roots of the *Carunculae Myrtiformes* externally on each Side the *Pudendum*. These and the above-mention'd Ducts discharge the Matter commonly call'd *Semen*.

E E E, The *Meatus Urinarius* open'd; at whose Extremity divers of the aforesaid *Ostiola* appear.

F F, The *Labia Pudendi* open'd.

G, The Internal Rugous Membrane of the *Vagina Uteri*: This Internal Membrane is much fuller of *Rugæ* towards its Upper Part, **B, C, D**, here divided, than in the Lower, **G**, next the *Rectum*: As it approaches the *Pudendum*, it becomes somewhat Narrower, and behind or above the Orifice of the *Meatus Urinarius* it frames a Valvulous Appearance in Virgins of above 16 or 17 Years of Age. In Girls of 7 or 8, it appears to be a Transverse Membrane having a Small Perforation towards its Upper Part. When the *Hymen* is broke, whether in Coitu or otherwise, the divided Parts of it make the *Carunculae Myrtiformes*, whence it is, the Figure and Number of those Caruncles are uncertain; *Wierus*, *Parry*, *Hildanus* and others give us Histories of Cases where the *Hymen* has been Impervious after Twenty-Two Years of Age, and such a Quantity of

Menstrua Pent in the *Vagina*, &c. extend the Lower Belly, as if they had gone with Child. Some Years since I was call'd by my Ingenious Friend *Dr. Chamberlin* to see a Marry'd Woman of above Twenty Years of Age, whose Lower Belly was very much Distended, as if with Child. Upon Examining the *Pudendum*, we found the *Hymen* altogether Impervious, and driven out beyond the *Labia Pudendi* in such Manner, that at First Sight it appear'd not unlike a *Prolapsus Uteri*. In the Upper Part towards the *Clitoris* we found the Orifice of the *Meatus Urinarius* very open, and its Sides Extruded not unlike the *Anus* or *Cloaca* of a Cock, and without any Difficulty I could put my Fore-finger into the Bladder of Urine. On dividing the *Hymen*, at least a Gallon of Grumous Blood of divers Colours and Consistencies came from her, which was the retain'd *Menstrua*. The next Day no less a Quantity of the same Matter flow'd after removing the Pessary which I had put in the Day before. After Three, or Four Days she was easie, and soon after recover'd, and with in a Year was deliver'd of a healthful Child. Her Husband told us, Tho' lying with her at First was very painful to himself as well as to her, yet at last he had a more easie Access; which could be by no other Way than the *Meatus Urinarius*.

Fig. 4.

The *Uterus*, *Ovaria* and *Fallopian* Tubes Dissected.

A, B B, The *Fundus Uteri* open'd to shew the Cavity and Thickness of its Sides.

C C, The *Collum Uteri* leading from the *Vagina* to the *Fundus*, likewise open'd.

D, The *Os Tincæ* or Orifice of the *Collum Minus*.

E, The *Vagina Uteri* divided to shew its *Rugæ*.

F F, The Cavity of the *Fundus Uteri* as it appears before Impregnation, it being of a somewhat Triangular Figure, and not exceeding the Magnitude it's here represented of. Between **D** and **F** is the *Collum Minus* or *Cervix Fundi Uteri*, where divers *Rugæ* are truly represented, in whose *Sulci* are the Orifices of divers small Tubes, which arise from a Glandulous Contexture of the Vessels of this Part; whence proceeds a Pituious Serous Matter, as may be seen by Compressing this Part externally.

De Graaf de Mul. Organ. Generat. Inferoi. *Cap. VIII.* acknowledges his Ignorance, to what End this Matter is here separated, unless it be to moisten the Parts and excite Venery, &c. In preparing a Humane *Uterus* after Three Months Impregnation, I found the *Os Tincæ* and *Collum Minus* very much dilated, and fill'd with a very Tough, Glutinous Matter. The like is taken Notice of by *Spiegelius*, *Lib. VIII. Cap. XXIII.* As the Time of the *Partus* draws in, the *Os Tincæ* still becomes Larger, and the Glutinous Matter encreases, whereby it prevents Abortions by opposing any Extrusion of the *Chorion*, notwithstanding the Efforts made by the *Fætus* from within towards the Time of the *Partus*: This Glutinous Matter also hinders the Intrusion of any Thing from the *Vagina* after Impregnation. When this Matter is Vitiated as in a *Fluor Albus*, Impregnation is Hindered.

Fig. 5.

G H H, The Orifices of the *Fallopian* Tubes in the Two Superior Angles of the *Fundus Uteri*.

I I I I, Two Probes Inserted into each of the last mention'd Tubes.

K, A small Constriction in the Mouth of the Tube.

L L, The Right *Fallopian* Tube Open'd and Expanded, whose Internal Membrane is somewhat Rugous.

M N, The Right *Ovaria* entire.

O O O, The *Fimbriae* or *Expansum Foliacium Tubæ*.

P P, A Broad Ligament between the *Ovarium* and Tube, not unlike to a Bat's Wing.

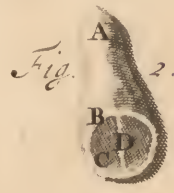
Q, The Left *Ovaria* Open'd.

R R, The External Membrane of the *Ovarium*.

S S, T T, Divers Glands and Transparent little Vescicles, which compose the *Ovaria*.

V V, The *Peritonæum* or External Tegument of the *Uterus*, which is call'd the *Ligamentum Latum*.

W W, Portions of the *Ligamenta rotunda Uterina*.







T H E

FIFTY-SECOND TABLE.



THE Cavity of the *Abdomen* after its *Viscera* are remov'd.

AA, The Common and Proper Integuments of the *Abdomen*, Dissected and turn'd Aside.

BB, The *Diaphragma in Situ*: It Arises Tendinous on the Right

Side from the Third, Second and First *Vertebra* of the Loins, and last of the Back (H); On the Left, from the First of the Loins, and Last *Vertebra* of the Back; hence Ascending with Flethy Fibres on each Side running Straight, but towards the Middle they pass somewhat Curvedly, Intersecting each other near the *Oesophagus* (D), do as it were Embrace it: After which they become Tendinous and join with its Upper-part (F), which Arises Thin and Flethy from the *Os Pectoris* or *Sternum*: Its Lateral Parts derive their Origins from the Cartilaginous Endings of the Ribs and Lower Margin of the Last Rib (G) on each Side. From these Parts the Flethy Fibres of the *Diaphragm* (like Lines drawn from a Circumference towards a Center) pass to its Middle Part, where its Tendinous Fibres are Intercussated with each other and Exhibit a *Rete*. Besides its Perforation for the *Oesophagus* in its Flethy Part, it has another in its Tendinous one, no less remarkable, to Transmit the *Vena Cava* (C). Its Double Origin at the *Vertebrae* of the Loins gives Way to the Descending Trunk of the *Arteria Magna* (E), and Two Ascending of the *Ductus Chyliferus* and *Vena Azygos* on the Left Side. In Expiration this Lower Surface of the *Diaphragm* is Concave towards the *Abdomen* (as here Exprest), and its Upper, Convex towards the *Thorax*. In Inspiration it Approaches towards a Plane next the *Thorax* as well as the *Abdomen*. If the *Viscera* of the Lower Belly are taken out in Vivisection, the Inferior Surface of the *Diaphragm* will Appear Convex in Inspiration, and more especially if Two small Wounds should be made into the Cavities on both Sides the *Thorax*, so that the Ambient Air may Rush into its Cavities on each Side the *Mediastinum*; the *Diaphragma* than will still remain Concave towards the *Thorax*, and Convex towards the *Abdomen*. Nor can Respiration be perform'd, except the Wounds in the *Thorax* are Large enough to Discharge its contain'd Air freely again; whence it happens that Wounds in the *Thorax* may suddenly prove Mortal, when no contain'd Part is Injured. But in such Cases the External Wounds ought to be Enlarg'd that the Air may have a Free Egress, which the Perforation of the Skin and Muscles not corresponding, Hinders; but this seldom happens, because both Sides of the *Thorax* are not very liable to be Wounded in such Manner at the same time. If one Side of the *Thorax* only is Wounded, the External Air ought by all means to be Pent out, tho' the Patient is not Incident to be Suffocated; because the other Side of the Lungs are not Incommoded, yet the Intruded Air ought to be let out, tho' it only Hinders the Dilatation of one Side of the Lungs. In Dissecting a Morbid Body which had one Side

of the *Diaphragm* very much Deprest, (by the contain'd Water on the same Side of the *Thorax*)

I found the Lungs on that Side in great Part Mortified, and the Blood Stagnated; there being some Air also broke out from the *Bronchia* into the Cavity of the *Thorax*, which compleatly Hinder'd Inspiration on that Side of the Lungs.

B, The Blood-Vessels of the *Diaphragm*, call'd *Phrenicae*.

C, The Perforation for the *Vena Cava*.

D, The *Gula* or *Oesophagus* cut off before it passes the *Diaphragm*.

E, The Trunk of the *Arteria Magna* in like Manner divided.

F, The Fore-part of the *Diaphragm* towards the *Cartilago Ensiformis*.

G, The Back-part Contiguous to the last Rib.

H, The Tendinous Origin of the *Diaphragm* on the Right Side call'd *Appendix*. The Chief Action of the *Diaphragm* is to Compress the *Viscera* of the Lower Belly, in Order to Enlarge the Cavity of the *Thorax* in Inspiration: Nor can we see any reason to doubt its being a Muscle elegantly Fram'd for this Action, wherein divers contingent Offices occur; as the great Work of Chylification is Assisted by the frequent Compresses made by it, in its repeated Contractions; and that not only in Promoting the Descent of the Contents of the Stomach and Intestines; but also the Ascent of the *Chyle* by the *Vasa Lactea* and Blood by the *Vena Porta* are also Promoted. It also hastens the Discharge of those Liquors contain'd in the Excretory Ducts of those many Large Glands within the Cavity of the *Abdomen*, as the Liver, Pancreas, Kidneys, &c. Not to mention many other contingent Offices of this Part; as in the Exclusion of the *Faeces* and Urine in both Sexes, and *Fœtus* in Women, &c.

II, The *Vertebrae* of the Loins with their Cartilaginous *Interstitia* join'd by Ligaments.

KK, The *Musculus Psoas Magnus* on the Right Side; the *Psoas Parvus* in this Subject perhaps was wanting.

LL, The *Psoas Magnus* on the Left Side somewhat free'd from the *Vertebrae*, and Pin'd out: This large Flethy Muscle derives its Origin from all the *Vertebrae* of the Loins Internally, Laterally within the Cavity of the *Abdomen*, whence Descending over the Superior Part of the *Os Sacrum* and Spine of the *Ilium*, where it joins with the Flethy Fibres of the *Iliacus Internus* (N), and passes to its Implantation on the Superior Part of the Lesser *Trochanter* of the Thigh-bone. This pulls the Thigh Upwards, and moves it Forwards in Walking, Running, &c.

M, The *Musculus Quadratus Lumborum*, Describ'd *Tab. 30*.

NNN, The *Iliaci Interni in Situ*: Either of these Muscles Arises from above half the Superior Region and Internal Concave Part of the *Os Ilium*; and joining with the *Psoas Magnus*, is Inserted with it to the Lesser *Trochanter*. The Office of this Muscle, and the *Psoas Magnus* are the same.

O, Part of the *Gracilis*.

PP, Parts of the *Triceps*.

T H E FIFTY-THIRD TABLE.

Fig. 1.



REPRESENTS the Fore-part of the *Fundus Uteri* not long after Impregnation, together with the Parts Annext.

A, The *Fundus Uteri*.

B, The Left *Fallopian* Tube Distended, and its Foliated Expansions

Embracing the *Ovarium*; which Action according to *De Graaf* do's not Appear in Rabbits till Twenty-four Hours after the *Coitus*.

CC, The *Ovaria* with their Protuberant *Ova* in their *Folliculi*.

DD, The Blood-Vessels more Extended with Blood than before Impregnation.

E, The Right *Fallopian* Tube with its *Fimbriae* Expanded.

FF, Portions of the Blood-Vessels of the *Ovaria* call'd *Præparantia* and *Spermatica*.

GG, A Portion of the *Peritonæum* which makes the External Membrane of the *Uterus*, and call'd *Ligamentum Latum Uteri*.

HH, The Uterine Round Ligaments lying under the *Peritonæum*.

I, The *Cervix Uteri* Divested of its Common Membrane the *Peritonæum*, to shew its Blood-Vessels.

KK, The *Vagina Uteri* Inverted, where its Internal *Rugæ* are well Exprest.

L, The Internal Mouth of the *Uterus*, call'd *Os Tincæ*, somewhat Dilated.

Fig. 2.

A, The Left Uterine Tube (Exprest in the preceding Figure) pull'd from the *Ovaria* it Embrac'd with its *Fimbriae*; which remain Extended, together with its whole *Ductus*.

B, The Fimbriated Orifice of the Tube Open.

C, Its Progress towards the *Fundus Uteri*: The whole Tube being of a deep Red Colour from its many Blood-Vessels, especially the Veins which Frame a Reticular Body, as may be Demonstrated either by Injecting them with Mercury, or Inflation. Hence it Appears the Uterine Tubes (not unlike the *Corpora Cavernosa Penis Clitoridis*, &c.) have their Reticulated Sides Extended, and their Internal Cavities of Consequence Enlarg'd upon a particular Stop of the Refluent Blood; but whether this Stop or Retardation of the Blood in the

Veins, made in the time of the *Coitus*, (which for some Reasons we are enclin'd to suppose) or as *De Graaf* intimates Five or Six and Twenty Hours after; neither our present Occasions nor Opportunities will allow us to Examine.

Fig. 3.

AA, The *Fallopian* Tube Open'd, according to its Length.

CCC, Its Internal Membrane Divided and Expanded.

DD, A Probe Inserted into its Beginning near the *Fundus Uteri*, which is not yet Divided.

The rest of the Adjacent Parts of this Figure are Explain'd Tab. 51. Fig. 4.

Fig. 4.

The Inferior or Back-part of the same Impregnated *Uterus*, &c. Exprest Fig. 1. Its Vessels here being Injected with Wax.

AA, The *Fundus Uteri* somewhat Enlarg'd by reason its Veins are Injected with Wax.

BB, The Veins fill'd with a Dark Colour'd Wax:

C, The Arteries with Red Wax: Both which Vessels become Distended by Injecting of their Large Trunks on either Side.

D, Part of the External Membrane of the *Uterus* deriv'd from the *Peritonæum*, Rais'd from the *Cervix Uteri*.

E, That Part of the *Peritonæum*, call'd *Ligamentum Latum Uteri*.

F, The *Ovaria* of the Left Side.

GG, The *Fallopian* Tubes also fill'd with White Wax, and very Tortuous in this Position, their Extremities being drawn from the *Ovaria*.

H, The Round Ligament of the Left Side.

II, The Broad Ligaments like Batt's Wings joining the *Fallopian* Tubes to the *Ovaria*, where the Blood-Vessels passing to and from the *Ovaria*, are Exprest.

KK, The *Vasa Spermatica* cut off. These Spermatick Veins and Arteries are not only Inosculated in their Large Trunks, with the Hypogastrick Veins and Arteries of the *Uterus*, but those of the Right Side of the *Uterus*, are Inosculated with the Left, in such Manner that by Injecting of Wax into one of the Spermatick Veins, it will not only fill the Hypogastricks, but the Spermatick Vein also of the contrary Side. The like will not happen by Injecting Wax into the Arteries, because their Trunks are Smaller than the Veins. But Mercury readily passes from the Arteries of one Side to those of the other.



Fig. 1.



Fig. 4.



Fig. 3.



Fig. 2.





T H E

FIFTY-FOURTH TABLE.



HE W S the *Abdomen* of a Woman open'd after Seven Months gone with Child.

A A A A, The common Integuments of the whole Body divided and turn'd off.

B B, The proper Integuments of the *Abdomen*, viz. The Muscles and *Peritonæum* in like Manner divided.

C C. The *Fundus Uteri* very much enlarg'd; and in this Subject enclines more towards the Right Side than the Left.

D D D, The *Colon* and Parts of the small Gutts as they appear above the *Fundus Uteri*.

d d, The Muscular *Compages* of Fleshy Fibres call'd the *Ligamentum Coli*, well Exprest.

E, That Part of the *Fundus Uteri* towards the *Collum minus*.

F F F, The Veins of the *Uterus* very much Dilated.

As the Time of the Birth draws on, so the Thickness of the *Uterus* is still said to encrease, and the Trunks of the Veins become still more and more distended. The Trunks of the Arteries of the *Uterus* are also at that Time proportionably Dilated. These Blood-Vessels of the *Uterus* are inosculated with those of the *Placenta*, as may appear by the Passing of Mercury from One to the Other, so that if you pour it into the Hypogastrick Arteries of the Mother, it will pass into the Veins of the *Placenta* as well as those of the *Uterus*: And on the contrary the Mercury will pass from the Arteries of the *Placenta* to the Hypogastrick Veins of the Mother, as also into the Veins of the *Placenta*. Hence it appears there is a Circulation of Blood between the Mother and *Fœtus*; and it seems as if the Blood-Vessels of both did Germinate and Inosculate with each other. But this requires too much Speculation for my Occasions to admit of a farther Enquiry at present. Therefore I shall here only speak of some *Phænomena* which offer in Child-bearing.

If the *Fundus Uteri* remain Tumif'd after Child-bearing or an Abortion, the Flux of Blood proves very great and sometimes destructive to the Mother, because the *Uterus* do's not Collapse, and by that Means close the Orifices of the Broken-off Arteries of the Mother. The like Flux also happens from the same Cause, when but Part of the *Placenta* comes away in the *Partus*; in which Case the remaining Part ought to be remov'd as soon as possible.



T H E

FIFTY-FIFTH TABLE.



S the *Abdomen* of the same Woman Open'd, Represented in the Precedent Table.

A A A, The *Fundus Uteri* after a Crucial Section Expanded.

B B *Inferior*, The Inside of the Skin Cover'd with Fat.

B B *Superior*, C C, The Inside of the *Peritonæum*.

D D, Part of the *Colon* above the *Fundus Uteri*.

E E, The External Convex Surface of the *Placenta* free'd from the *Fundus Uteri*.

F G H, The Asperities F, Little Hollownesses G, and Tubercles H, of the *Uterus*, which receive and were receiv'd by the like in the *Placenta*.

I K, Part of the *Chorion* cleaving to the Internal Concave Surface of the *Placenta*.

L, Part of the Urinary Membrane or *Allantoides*.

M, Part of the *Amnios* made bare, as it Appears fill'd with its containing Liquor.

Tho' this Membrane which immediately Involves the *Fœtus*, Appears in most Parts very Transparent, yet here are a vast Number of Blood-Vessels every where dispers'd thro' it. In divers Parts of the *Amnios* in Cows, I have more than once Observ'd Various Clusters of somewhat Opacous Bodies, which I am apt to think are a Congeries of Glands, and help to Separate from the Blood, Part of the Contents of the *Amnios* in which the *Fœtus* mov'd, and is receiv'd by its Mouth towards the time of the *Partus*.

N, Part of the *Chorion* Rais'd from the *Amnios*, and Left to the *Uterus* it self on the Right Side.

Part of the Liver Appears above the Intestines immediately under the Ensi-formal Cartilage.







T H E
FIFTY-SIXTH TABLE.



THE *Abdomen* and *Uterus* of the same Woman (Figur'd in the Two precedent Tables) Open'd, after Seven Months gone with Child.

A, The *Placenta Uterina* free'd from the Upper Part of the *Uterus*, and drawn towards the Right Side, so that its Internal Concave Surface next the *Amnios*, Appears Cover'd with the *Chorion*; under which the Arboreous Disposition of its Blood-Vessels are elegantly Exprest.

B, Part of the *Chorion* free'd from the *Amnios*, and Rais'd with the *Placenta*, to whose Concave Part it Adheres, and its continued (H) on the Umbilical Rope.

C, Part of the Urinary Membrane free'd from the *Amnios*, and cleaving to the *Chorion*.

DD, The *Uterus* with the *Chorion* Divided Cross-ways and Expanded. The Inequalities of the Internal Surface of the *Uterus* are here Remarkable: Its Blood-Vessels as well as those of the *Placenta* not only Germinate, but Inosculate with each other, as is above Noted.

EE, The Proper Integuments of the *Abdomen*, (*viz.*) the Muscles and *Peritonæum* in like Manner Divided.

F, The *Fœtus* lying within the Transparent Membrane call'd *Amnios*.

G, The *Amnios* entire.

H, The Umbilical Rope Arising from the *Placenta*, and passing to the Navel of the *Fœtus*: Its Progress is Various, sometimes it Marches over the Right Shoulder, sometimes over the Left close to the Neck; at other times it Ascends towards the Breast, whence it is again Reflected to the Back of the *Fœtus*, and thence to the Navel. Tho' the Blood-Vessels of the Umbilical Rope are Dispos'd in the best Manner (*Vid. Tab. 60. 62. Fig. 5.*) to avoid their being Comprest in any Contorted Position; yet it sometimes happens either thro' the shortness of the Umbilical Rope, as in the Case mention'd by *Hildanus, Cent. II. Observ. LI.* or by the great Struggling of the *Fœtus in Utero*; that it is so Comprest, that the Blood cannot pass in its Vessels: In which Case if an Abortion do's not happen, or if it is at the time of the *Partus*, and the Birth do's not presently follow, the Dead *Fœtus* with its Secondines are retain'd in the *Uterus*; and if the Mother Survives, they do gradually Putrifie and come away; as Appears in the History of a Case very well Attested in the Excellent Works of the above mention'd Author, where the Bones with Part of the Muscles of the Limbs were taken out near the Navel of the Mother, some Months after the Secondines gradually came away at her *Pudendum*. A like Instance was lately Communicated to me by the Ingenious Mr. *Dale* the *Apothecary*, who was an Eye-witness of it in a Woman in the Country where he lives.

IKLMNOP, The *Fœtus* lying in the *Uterus* in its Natural Posture.

The Posture of the *Fœtus* in the *Uterus* varies very much, especially towards the time of the *Partus*; this Order of it is then Inverst, the Head at that time is downwards towards the Neck of the Womb. In the most easie Births, the Face is turn'd towards the Back-bones or *Os Sacrum*. If any Part, besides the Head of the *Fœtus* offers it self first, (except both Legs together,) the Birth proves Laborious, and sometimes very Dangerous; wherefore the Operator in such a Case is Oblig'd (if possible) to reduce those Parts, and turn the *Fœtus* to the most Natural Order that can be.



T H E
FIFTY-SEVENTH TABLE.


AA,  IVERS Eggs of a different Size taken from the *Ovaria* of a Maid.

Fig. 2.

An Egg Impregnated; in which the Branches and *Plexus* of divers Blood-Vessels Appear.

Fig. 3.

A *Fœtus* with its *Secondines*, Twenty-five Days after Conception; in which the Rudiments of all the Limbs Appear.

AA, The *Placenta Uterina*.

B, The *Chorion*.

C, The Urinary Membrane according to *Bidloo*.

D, The *Amnios* Open'd.

E, The Umbilical Rope between the *Placenta* and *Fœtus*.

F, The *Fœtus*.

Fig. 4.

A *Fœtus* Forty Days after Conception, in which all the External Parts Appear Distinct.

Fig. 5.

A Masculine *Fœtus* about Two Months and a Half after Conception; in which the Magnitude of the Head in Proportion to the rest of the Body is Remarkable. The Conformation of the Bones at that time may be seen in the 100. *Tab. Fig. 3, 4.*

Fig. 6.

An Abortive Three Months after Conception, or thereabouts Dri'd; so that the Connection of its Bones may be seen in divers Parts.

Fig. 7.

A *Fœtus* of Eight Months taken out of the *Uterus*, together with its *Placenta*, &c.

A, A Male *Fœtus*, whose Hands are Contracted and Feet Contorted Inwards.

BCD, The Umbilical Rope continued in its wonted Progress between the *Fœtus* and *Placenta*.

EE, The *Chorion* covering the Internal Concave Surface of the *Placenta*, and its Arboreous Ramifications of Blood-Vessels deriv'd from the Umbilical Rope.

F, Part of the Urinary Membrane.

G, Part of the *Amnios*.

H, A Portion of the *Chorion*.









T H E FIFTY-EIGHTH TABLE.

A, **H E W S** the External Convext Surface of the *Placenta Uterina* free'd from the *Uterus*.



The *Placenta* is compos'd of Blood-Vessels of both Kinds deriv'd from the Mother and *Fœtus*, which Frame Glandulous Bodies and Fibres, to which divers Succiferous Ducts are Inserted, says *Bidloo*.

These Succiferous Tubes and Glands I must confess never yet Occur'd to my Observation in Dissection, nor do I at present know who besides Professor *Bidloo* mentions them : Here he only Names them among other Vessels of the *Placenta*, and in *Tab. 66.* he Represents divers Succiferous Ducts in the Umbilical Rope ; nor do's he any where mention what

Juice these Ducts of the *Placenta* carry, or those of the Umbilical Rope ; wherefore I shall here Venture to add my Conjecture, and so proceed. If any Liquor Transcolated by Glands of the *Placenta* is convey'd towards the *Fœtus*, it is most likely that contain'd in the *Amnios* ; and tho' we have Observ'd *Tab. 55.* divers Glands plac'd at Various Distances in the *Amnios* of Cows, yet we can by no means think they are sufficient to supply that Membrane with a Necessary Quantity of Liquor for Entertaining the *Fœtus* : And since we have Observ'd divers Tubercles on the Surface of the Umbilical Rope, mention'd in the following Table (P). We cannot tell how to reconcile those *Phænomena*, but by supposing the greatest Part of the Liquor of the *Amnios*, is convey'd thither from the Glands of the *Placenta*, by the Ducts of the Umbilical Rope.

This Liquor of the *Amnios* not only serves to Facilitate the Motions of the *Fœtus*, but towards the time of the *Partus* it is partly receiv'd by its Mouth, and is convey'd into its Stomach and Guts, and Administers Chyle to its Lacteals and Thoracick-Duct ; which is receiv'd by the Subclavian Vein of the *Fœtus*, and there joins with the Blood Transmitted from the Mother to the *Fœtus*. Thus the Stomach and Intestines as well as the Common Passages of Chyle and *Lympha* of the *Fœtus* are employ'd in the *Uterus* ; by which means those Channels are the more readily made use of, soon after the Birth, when the Infant has no other way of receiving its Nourishment but by the Mouth. The Chyle thus mingling with the Blood of the *Fœtus*, so Thins it, that its Circulation may be the better carried on by the weak *Systole* of its Heart ; whereby its Blood may be again Discharg'd into the Hypogastrick Veins of the Mothers *Uterus*. The Liquor of the *Amnios* has another, as it were Accidental Use, in Lubricating the *Vagina* at the Time of the *Partus* ; the *Fœtus* then breaking the *Amnios* by its Strugling, its Contents flow by the *Pudendum*, which they commonly call *The Breaking of the Water*.

B.B, The Furrows or Clifts of the *Placenta*, which more or less Result from its Tubercles.

C.C, The Tubercles of the *Placenta*, which are Thick and Large towards their Center, and Less towards their Circumference.

D.D, The *Chorion* or External Membrane Involving the *Fœtus*, Varigated with Blood-Vessels Springing from the *Placenta*, (and Umbilical Rope in some Animals) and the *Uterus* it self in Humane Bodies.

E.E, The Urinary Membrane call'd *Alantoides*, lying immediately under the *Chorion*, and cleaving to it by Vessels and Fibres ; it Environing the whole *Fœtus*, according to *Bidloo*.

The Existence of this Membrane is much Doubted of in Humane Bodies. I must confess I never met with a Subject in which I could Discover it. The Midwives take Notice of a *By Water*, as they call it, near the Time of the *Partus* ; which I am apt to think is the Contents of this Membrane breaking forth, which often happens some Weeks before the Birth, and no ill Consequence follows.

F, Part of the *Amnios* or Internal Membrane Involving the *Fœtus*.

G, Part of the Umbilical Rope Tied.



T H E
FIFTY-NINTH TABLE.



XPRESSES the Membranes which Involve the *Fœtus*; together with the Internal Concave Part of the *Placenta* next the *Fœtus* and Umbilical Rope. Which altogether are call'd the Secondine, or After-Birth, or Burden.

A A, The *Amnios* Separated from the Urinary Membrane; Tho' the *Amnios* appears Transparent to the Naked Eye, it is full of Blood-Vessels of both Kinds deriv'd from the Umbilical Rope: If Mercury is Injected into its Arteries and Veins, their Extremities will (by the Assistance of a Microscope) appear continued to each other; as in a Preparation of Part of the *Amnios* I have now by me, taken from a Cow, mention'd in the 55th Table.

B B, A Portion of the Umbilical Rope arising from about the Middle of the Internal Concave Side of the *Placenta*.

C C, Part of the Urinary Membrane not free'd from the *Chorion*: In Cows and other Quadrupedes, it is Long and Unequal; whence it's call'd *Allantoides* or *Farcinialis*: It is plac'd between the *Amnios* and *Chorion*, and receives the Urine from the Bladder by the *Urachus* thro' the Umbilical Rope. The *Urachus* of Humane Bodies is scarce Pervious. I must acknowledge in the Subjects I have Examined, I could never make the Wind pass from the Bladder of Urine into the *Urachus* in the Umbilical Rope; but I have constantly found the *Urachus* evidently Hollow from the Bottom of the Bladder to the Navel in a *Fœtus*, and very little further.

D D, The *Chorion* strictly cleaving to the Internal Concave Side of the *Placenta*.

E E, The Cavities and Tracts of the Succiferous Ducts according to *Bidloo*.

F, The Umbilical Arteries Distended.

G G, The Internal Concave Surface of the *Placenta* next the *Fœtus*.

H I, The Ramifications of the Arteries tending towards the Circumference of the *Placenta*.

K K, The Large Ramifications of the Umbilical Veins Distended.

L, Their Lesser Branches.

N N, Divers Indentations made in the Veins where the Arteries pass over them.

O, The Concourse of the Umbilical Vessels to their Inclosure in the External Membrane of the Umbilical Rope (P).

P, That Part of the Umbilical Rope, whose External Surface in Cows is full of Tubercles, which we suppose are plac'd at the Extremities of the Succiferous Ducts, where they Discharge their Contents into the *Amnios*. This Part of the Umbilical Rope in these Animals we find Distended with a Mucilaginous Matter, somewhat Thicker than that contain'd in the *Amnios*, but like it in Colour.





Fig. 5.

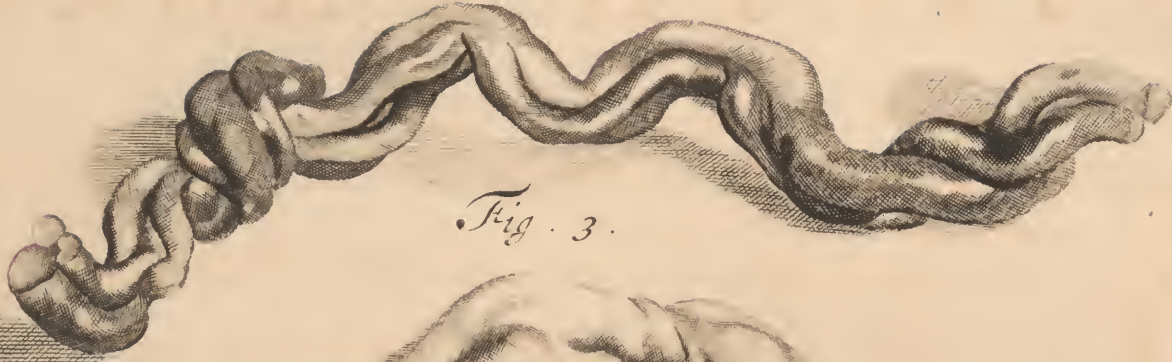


Fig. 3.



Fig. 1.



Fig. 2.



Fig. 4.



T H E S I X T I E T H T A B L E.

Fig. 1.



EMONSTRATES the Blood-Vessels of Part of the Umbilical Rope and *Placenta* Injected with Wax.

A B, The Concave Internal Surface of the *Placenta* next the *Fœtus*.

C C, The *Chorion*.

D, Part of the Urinary Membrane according to *Bidloo*.

FF, &c. The Umbilical Arteries fill'd with Red Wax.

GG, &c. The Veins in like Manner Injected with White Wax.

H, The Umbilical Rope cut off.

IK M, The Propagations of Vessels from the Umbilical Rope to the *Placenta*.

Fig. 2.

A A, The *Placenta* cut transversly.

BC, The Thickness of the *Placenta* in a Transverse Section.

DD, Its Glandulous Body.

EE, Some large Branches of Blood-Vessels Propagated from the Umbilical Rope under the *Chorion*.

F, The Succiferous Ducts according to *Bidloo*.

G, Their little Hollownesses or *Interstitia* like Fat.

HH, A Portion of the *Chorion*, free'd from the *Placenta* and suspended.

II, The Blood-Vessels which lie between the *Chorion* and *Placenta*.

KK, Their Ramifications as they appear under the *Chorion* on the internal Concave Surface of the *Placenta*.

L, Part of the Urinary Membrane.

M, A Portion of the *Amnios*.

N, The Umbilical Rope cut off and ty'd.

Fig. 3.

The Umbilical Rope with Part of the *Chorion*.

A, Part of the *Chorion* free'd from the internal Concave Part of the *Placenta*.

B, The Umbilical Rope cut transversly from the *Fœtus*.

CC, The Two Umbilical Arteries cut off.

D, The Umbilical Vein in like Manner divided.

E, The *Urachus* according to *Bidloo*, Express'd in the following Figure between the Two Arteries.

FF, The Umbilical Rope cover'd with its loose Membrane continu'd from the *Amnios*.

Fig. 4.

A A, The Umbilical Rope cut transversly and view'd with a Microscope, after its being immers'd in hot Water.

B, The Trunk of the Umbilical Vein divided.

CC, The Trunk of the Two Umbilical Arteries in like Manner cut off.

DD, The Succiferous Tubes also divided.

EE, The Fibres contracted by the hot Water.

F, The thin contorted Tube of the *Urachus*, lying between the Two Arteries like a loose or flagging Membrane.

Fig. 5.

The Umbilical Vein and Two Arteries Injected with Wax and dry'd, so that the *Urachus* and Succiferous Tubes disappear.



T H E SIXTY-FIRST TABLE.

Fig. 1.


A A,  XHIBITS the *Placenta Uterina*, after the Blood is Wash'd out of it.
 B, The *Chorion* partly Rais'd from the *Placenta*, and lying Loosely on it.
 C, Part of the Urinary Membrane according to *Bidloo*.
 D D, The Contexture, and Reticular *Plexus* of the Vessels of the *Placenta* made bare.
 E E, The Concave Surface of the *Placenta* next the *Fœtus*.
 F F, The Blood-Vessels.
 G, A Portion of the Umbilical Rope.

Fig. 2.

A, Part of the *Chorion* separated from the Urinary Membrane, and supported on a Piece of Paper.
 B C, The Urinary Membrane Pinn'd out, from which the *Chorion* is separated.
 D D, A Piece of Paper Rold up to support the *Chorion*.

Fig. 3.

A B B, Part of one of the Umbilical Arteries free'd from the Umbilical Rope, and Extended with Wind; in which the Various Inequalities of its Trunk (occasion'd by its Contortions with its Companion and the Umbilical Vein) are Express'd.
 C C, The same Artery Open'd according to its Length, and Expanded.

Fig. 4.

Part of the Umbilical Rope.
 A *Inferior*, Part of the Umbilical Vein Open'd according to its Length.
 A B B, The Umbilical Arteries inclos'd in their Proper Membranes.

Fig. 5.

A, Part of the Blood-Vessels of the Umbilical Rope Injected with Wax.
 B B, The Two Arteries fill'd with Red Wax, in which may be observ'd the Inequalities of their Trunks.
 C, The Vein Distended with a Dark Colour'd Wax.

Fig. 6.

A A, Part of the *Chorion* free'd from the *Placenta*.
 B B, The Blood-Vessels of both Kinds free'd from the Glands Succiferous Tubes and Ducts, according to *Bidloo*.

Fig. 7, 8.

The Branching of the Arteries and Veins on the *Chorion*, whose Capillary Extremities frame Glands, and Escape the Sight of the Naked Eye.

Fig. 9.

This is not taken Notice of by *Bidloo*; but I suppose it Represents Part of the Blood-Vessels of the Umbilical Rope, free'd from their Membranes and not Injected with Wax, or any Thing else; the Trunks of the Two Arteries and Vein appearing Flaccid.



Fig. 1.



Fig. 4.

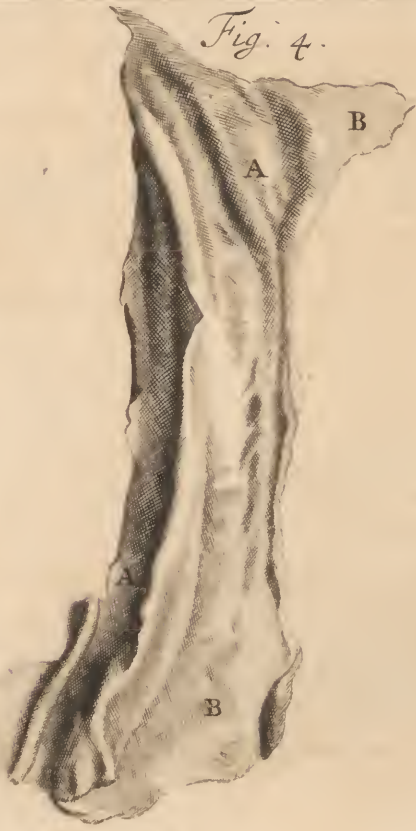


Fig. 5.



Fig. 3.

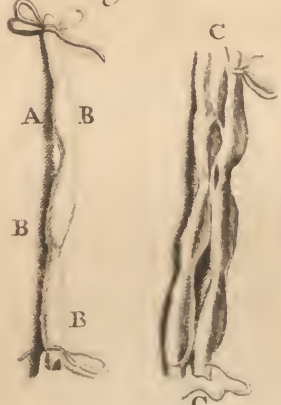


Fig. 2.

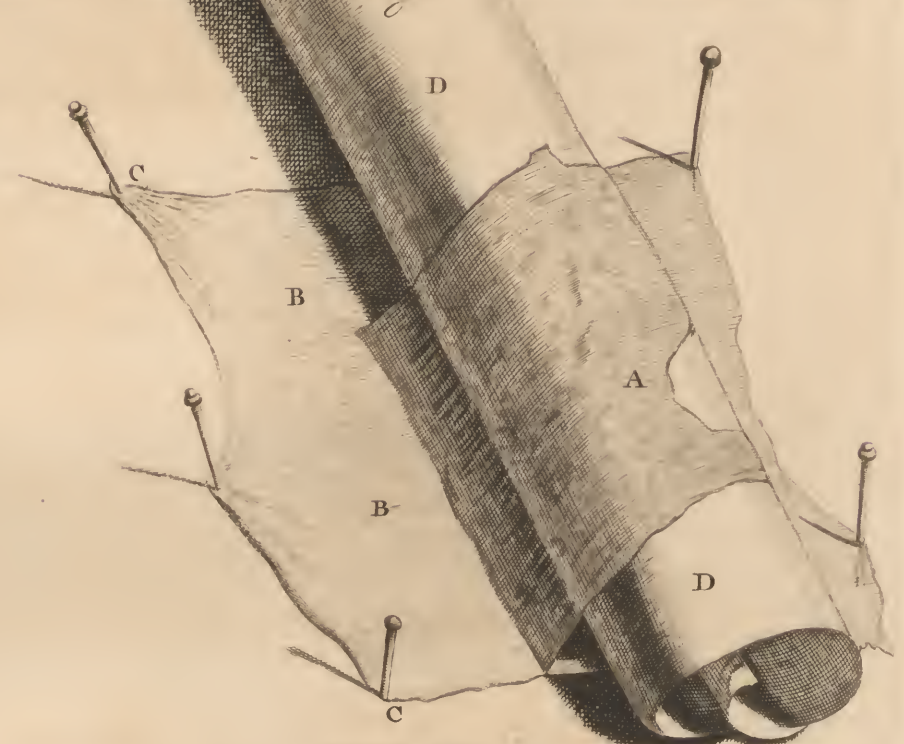


Fig. 7.



Fig. 6.



Fig. 9.

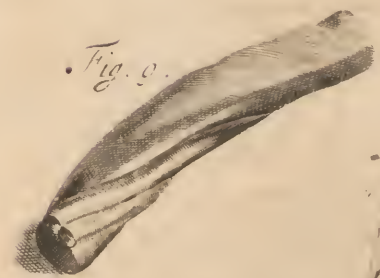


Fig. 8.





T H E SIXTY-SECOND TABLE.



THE *Abdomen* of a Female *Fœtus* Seven Months after Conception open'd, to shew the Progress of the Umbilical Vessels towards its Navel.

A, The Umbilical Rope suspended:

CC, The Common and Proper Integuments of the *Abdomen* turn'd aside.

EG, The Umbilical Vein entering the Liver at a Fissure near the Middle of its lower Part, whence the *Ligamentum Suspensorium Hepatis* may be here seen continu'd to the Ensisformal Cartilage and Diaphragm.

F, The Liver, which in Proportion to the rest of the *Viscera* in a *Fœtus*, is very large, extending it self to both *Hypochondria*.

The Magnitude of the Liver in a *Fœtus* rather Proceeds from a greater Quantity of Blood carri'd into it by the *Vena Umbilicalis*, than any proper Office it then Executes: This Disproportion of the Liver do's not remit in an Infant, but seems to continue in some Measure, till they are Four or Five Years Old: Hence it is, that the Intestines of Infants and Children are suppli'd with more Gall than those of riper Years; and are therefore incident to be gript much in the lower Belly, and attended with a *Diarrhœa*. Nor do I in this conceive Nature has any Ways committed a Mistake; for sure it is very necessary some notable Discharge ought to be made of the Serofities in Children, whilst their Limbs are not able to perform those Exercises which promote Perspiration and the like.

The Blood imported into the Liver by the Umbilical Vein meets with a contrary Current of Blood in the *Vena Porta*, as it passes the *Sinus* to the *Vena Cava*; whereby some of the Capillary Vessels about the Liver or Umbilical Vein are frequently broken, and the Blood is discharg'd into the Cavity of the *Abdomen*.

In an Abortive Humane *Fœtus* (after Seven Months Conception) I found the *Abdomen* without any Integuments; its *Viscera* being expos'd, as in this Figure: Nor could I find so much as any Part of the *Peritonæum* that had cover'd them; which I suspected might have been broken. The Left Kidney also was expos'd to View. Besides this, the Top of the Skull was wanting, and instead of it a Membrane distended with Grumous Blood. Very little Part of the Brain appear'd on the *Basis* of the Skull, but it was chiefly contain'd in the *Specus* of the *Vertebræ* of the Neck. The Left Eye and Ear were wanting, as well as the Nose. A Ligament of about an Inch in Length, fasten'd the great Toe of the Right Foot to the Bone of the upper Jaw. The Left Arm was wanting; and instead of it, something like a Hand was fram'd, seeming to have a Thumb and Fore-Finger: This was ty'd by Two Ligaments; the one springing from the *Carpus* was short, and fasten'd it to the *Scapula*; the other Ligament was longer, and arising between those Parts which represented a Finger and Thumb, was fixt to the *Basis* of the Skull on the same Side.

Upon opening the *Thorax* I found the Cone of the Heart pointing upwards; its *Basis* towards the Diaphragm. And both Extremities of the Bastard Ribs of the Left Side resting on their *Vertebræ*.

GG, The Two Umbilical Arteries Arising from the Two Internal Iliack Branches of the *Arteria Magna*, and passing on both Sides the Bladder of Urine to the Umbilical Rope.

H, The Bladder of Urine.

I, The *Urachus* where it is visibly pervious.

The *Ligamentum Suspensorium Hepatis*, is here well Exprest between the Umbilical Vein and Ensisformal Cartilage; and the Small Gutts in their Natural Situation, are also Represented.



T H E SIXTY-THIRD TABLE.



REPRESENTS the Cavities of the *Abdomen* and *Thorax* open'd of the same Female *Fœtus*, Express'd in the preceding Table.

A, The Umbilical Rope suspended.

B, The Umbilical Vein.

C, Its Insertion into the Liver.

DD, The Two Umbilical Arteries, arising from the Two internal Iliack Branches of the *Arteria Magna*. *Vid. App. Fig. 3. 56. 56.*

EE, The External Iliack Branches of the Great Artery, by our Author said to be Internal; which in this View of the Parts do's not appear.

FG, The *Urachus*.

H, The *Umbilicus* cut from the Common Integuments of the *Abdomen*.

I, The Head of the *Fœtus*, which in Proportion to the rest of the Body is much larger than in the Adult: See the Description at *Tab. 1.*

K, The *Mammæ*, which in a *Fœtus* of both Sexes contain a Serous Liquor.

L, The *Thorax* open'd.

MM, The *Abdomen* in like Manner open'd.

N, The *Thymus* in Proportion to the rest of the Parts, is very large in a *Fœtus*, and gradually lessens in the Adult: See *Tab. 21.*

O, The Heart, which in Regard to the other *Viscera* is very large.

P, The Lungs on the Right Side.

QQ, The Kidneys, which appear Conglomerate, and are somewhat large.

RR, The Glands of the Kidneys or *Capsulæ Atrabiles* are also large, and are here remov'd from their proper Situation; they not only bordering on the Kidneys, as in the Adult, but lie upon them, embracing their Upper Parts: In this Figure they seem to be remov'd from their Proper Situation.

SS, The Ureters, which are also large and unequal.

T, The Bladder extended with Urine.

V, The Falloppian Tube, somewhat long, and very large in Proportion to the rest of the Parts.

W, The *Ovaria* are also Large and Tumid.

X, The *Fundus Uteri* somewhat rais'd by the Suspension of the Bladder of Urine.

a, The Round Ligament of the *Uterus* of the Left Side.

b, The *Arteria Magna*, where the Emulgent Arteries pass to the Kidneys.

c, The Ascending Trunk of the *Vena Cava* cut off.

dd, The *Diaphragma* divided.

e, The Spleen *in Situ*.

The Stomach and Intestines are here laid aside.

f, The *Sternum* rais'd together with the Cartilaginous Endings of the Ribs, where the Mammary Vessels on both Sides are Express'd.

Fig. 2.

A, The Bladder of Urine of a *Fœtus*.

B, Its Ureters fill'd with Wax.

CDD, The Umbilical Vein and Two Arteries, according to *Bidloo*, which we cannot think to be well Express'd.

E, The Descending Trunk of the *Arteria Magna*.

F, Its Bifurcation.

GG, Its Two Internal Iliack Arteries, whence the Umbilical Arteries arise.







T H E SIXTY-FOURTH TABLE.



HE Professor Bidloo in Imitation of *Steno* and *Bourdon*, here adds Geometrical Figures of the Disposition of the Tendons and Flethy Fibres of divers Muscles; First of a single Fibre.

Fig. 1.

A, The Flethy Part of the Fibre of a Muscle;
B C, B C, Its Two Tendinous Extrems making Obtuse Angles with the Flethy Part.

Fig. 2.

Many of the Fibres Represented in the First Figure, Expos'd in the same Plan together, Framing an Oblique Angled Parallelogram.

A, B, The Order of the Moving, or Flethy Fibres.

C, D, E, G, } Their Tendinous Extremities: When any
E, H, I, K, } Additional Matter passes into these Flethy
Fibres and Distends them, the Breadth which they thereby Acquire, necessarily Shortens them, and their Tendinous Extremities fixt to the most Movable Part, is pull'd nearer the more Stable. This Additional Matter we take to be the Blood, which is constantly in a Progressive Motion, as well in the Capillary as in the Larger Trunks of its Vessels; and when a sudden Stop or Retardation of it happens in the Trunks of the Veins in Muscles, the Blood in the Extremities of those Veins necessarily breaks forth by their Collateral Pores, and passes into the Cells of the Flethy Fibres; whence an Intumescence of those Fibres follows, and their Length is necessarily Lessen'd. When I say the Blood as a *Pondus* Acts in Muscular Motion: I mean that as a Fluid, it Insinuates where ever there is a Passage, and necessarily Distends the Cells of the Flethy Fibres, when it is push'd on by the Arteries, and do's not readily return by the Veins. This Structure of the Extremities of the Blood-Vessels in Muscles, renders the Appearance of their Flethy Fibres Red or more Bloody than other Parts, which are Furnish'd with a far greater Number of Blood-Vessels than the Muscles; as the *Pancreas*, Salival Glands, and Cortical Part of the Brain. The Liver, Spleen, and Kidneys have their Colour, from the Number and Magnitude of their Blood-Vessels always fill'd with Blood. The Question is, How the Venose Channels are so instantaneously Comprest that the Refluent Blood is Retarded? Till Enquiry and Observation affords me something to the purpose, I shall say no more; choosing to Recommend such Speculations, to those who have more Talent and Time to bestow on them.

Fig. 3.

The Fibres of a Muscle Framing a Simple Parallelepiped Figure.

A, B, C, D, E, F, G, The Carnous Part.
H, I, K, L, The Tendinous Parts.

Fig. 4.

The Disposition of the Fibres of the *Musculus Deltoides*, said to be Compos'd of Twelve simple Muscles.

A A, The Upper-part of the *Deltoides* towards the Top of the Shoulder.

B B, Its Lower-part.

1, 2, 3, 4, 5, 6, 7, } The Order of the Flethy Fibres which
8, 9, 10, 11, 12, } Frame Parallelograms, and Compose the *Deltoides* Muscle, fixt to their Tendinous Extremities A B.

Fig. 5.

The Order of Fibres of the *Musculus Biceps Humeri*.

Fig. 6.

The *Musculus Membranosus*.

Fig. 7.

The Fibres of Part of the *Gemellus*.

We come next to the Muscles of the *Artus* or Limbs; and First to those of the Whole Arm, by which is understood all the Part fastned to the Upper-part of the Trunk of the Body, Arising at the Shoulder. Fig. 8. The Arm in common Acceptation, is taken to be all that Part between the Neck of the Shoulder-blade and Wrist (H). The Arm strictly speaking, is that Part between the Shoulder and Elbow (B),

which, otherwise, is call'd *Humerus*: It consisting of One Bone, and is call'd *Os Humeri*, the Shoulder-bone, or Arm-bone. The Lower-part of the Arm from the Elbow (B) to the Wrist (H), is call'd the Cubit, and consists of Two Bones, call'd *Ulna* and *Radius*; we shall elsewhere speak of the Articulations of these and other Bones. As some have Comprehended the Shoulder or Arm, Cubit, Hand, and Fingers under the Title of the Whole Arm; so others have call'd all those together, *The Whole Hand*. The Hand in common Acceptation, is meant all that Part below the Cubit, or Wrist, consisting of Four Fingers (M N O P) and a Thumb (L). The Palm (C) call'd *Vola Manus*; opposite to which is the Back of the Hand or *Dorsum Manus*.

Fig. 8.

The External Muscles of the Arm, Cubit and Palm.

A A A, The Skin with its Parts Annex't free'd from the Muscles.

B, The Internal Tubercle of the *Os Humeri*, whence the *Musculus Pronator Radii Teres*, *Palmaris Longus*, *Flexores Digitorum Communes*, and *Flexores Carpi* do Arise.

C, The Tendinous Expansion of the *Palmaris Longus* in the Palm; where, near the Root of the Fingers it's Divided, to give Way to the Tendons of the *Flexores Digitorum*.

D, The *Biceps Cubiti*.

E, The *Pronator Radii Teres*.

F, The Long Tendon of the *Palmaris* deriv'd from a small Flethy Bodied Muscle, springing from the Internal Protuberance of the *Os Humeri*, here Exprest.

G, The Tendon of the *Radialis Flexor Carpi*, whose Description may be seen *Tab. 67, 68*.

H, The Transverse Ligament of the *Carpus*.

I, The *Abductor Pollicis* Arising from the *Ligamentum Transversale Carpi*, and Ending at the Superior and External Part of the Second Bone of the Thumb. It draws the Thumb from the Fingers, whence it derives its Name.

K, The *Palmaris Brevis*, or *Caro Musculosa Quadrata*; This springs from the External Part of the *Os Metacarpi Minimi Digiti*, with a Thin Tendon Encompassing the External Part of the *Abductor Minimi Digiti* becoming a Thin Disgregated Flethy Muscle in the Palm, as it is here Represented; it passes under the Tendon of the *Palmaris Longus*, to its Tendinous Termination in the Eighth Bone of the *Carpus*.

This Hollows the Palm by drawing the Bale of the Thumb or *Mons Lunæ*, and Metacarpal Bone of the Little Finger, nearer each other.

L M N O P, The Thumb and Four Fingers, with Part of the Skin remaining on them.

Q, The Head of the *Os Humeri* which was Articulated with the *Scapula*.

R R R, The Blood-Vessels and Nerves passing within the Arm, between the *Musculus Biceps* and *Gemellus*, of which the Former especially the Arteries are to be Comprest in the time of Amputation; which may be perform'd with the Fingers only, without any Compress or Boulsters under them; or with the hard Twisting of a Ligature, which some use: The Compression being thereby the more easily Commanded, to let the Arterious Blood pass out in Order to Discover the Divided Large Arteries, so that they may be taken hold of with the Ends of the Forceps and Ti'd; which Practice we can't but Recommend in Amputations, or in other Cases where Large Fluxes of Blood happen. Nor have I found any considerable Inconveniency to the Patient, tho' the Trunk of the Nerve has been also Ti'd up with the Artery, which the Diligent Operator may very easily avoid.

S, Part of the *Musculus Deltoides*.

T, Part of the *Gemellus* or *Biceps Externus*.

V V, The Tendinous Part of the *Musculus Supinator Radii Longus*.

W, The *Flexor Carpi Ulnaris*.

X, Part of the *Musculus Flexor Digitorum Perforatus*.

Y, The *Abductor Minimi Digiti*.

Z, *Flexor Primi & Secundi Ossis Pollicis*; It Arises Flethy from the *Ligamentum Transversale Carpi*, Bones of the *Carpus* at the Bottom of the *Mons Lunæ*, and *Os Metacarpi* of the Middle Finger; whence passes to its Insertion partly to the *Ossa Sesamoidea* of the Second Internode, and partly to the First Bone of the Thumb: This Disgregated Flethy Muscle is very Divisible as *Vesalius* takes Notice, and Appears *Tab. 68. MNOOP*. It moves the Thumb Variously according to the several Disposition of its Series of Fibres, Inclining its First and Second Bones, either Directly or Obliquely towards the *Carpus* and Palm.

T H E S I X T Y - F I F T H T A B L E .



REPRESENTS divers Muscles of the Arm and Cubit.

A, The *Musculus Deltoides* Rais'd from its Origination and left at its Insertion.

B, The *Clavicula* made bare.

C, That Part of the *Deltoides* Muscle, which Arises from the *Spina Scapulae*.

D, The *Pectoralis* cut from its Original, and left at its Implantation.

d, The *Rotundus Major*: It Arises from the Inferior Angle of the *Scapula*, and becoming a round Flethy Body, passes under the Superior Head of the *Gemellus*, where it Grows Thinner and makes a Broad Flat but short Tendon

Implanted below the Neck of the *Os Humeri*. Its Office is to draw the Arm Backwards and pull it somewhat Downwards.

E, The *Subscapularis* or *Immersus*: It fills the Internal Concave Part of the *Scapula*, Arising Flethy from its whole *Basis* and Superior and Inferior *Costa* Internally, and in its Progress Lessens its self according to the Configuration of the *Scapula*, and Running over its Juncture; it's Inserted to the Neck of the *Os Humeri* in a Semicircular Manner. This draws the Arm to the Trunk of the Body, and is made Use of by the Bag-pipe-Player to Compress his Bellows under his Arm.

F, The *Coracobrachialis*: Its partly Flethy and partly Tendinous Origination, is at the extrem Point of the *Processus Coracoides Scapulae*, in its Descent Growing Thicker, strictly Adhering to the Internal Head of the *Biceps*, which it Parts from near its partly Tendinous and partly Flethy Insertion, about the Middle of the Internal Part of the *Os Humeri*.

f, A Trunk of a Nerve which passes thro' the last Describ'd Muscle; whence it's also call'd *Perforatus*.

GG, The *Basis Scapulae*.

H, The *Processus Coracoides Scapulae*.

I, The *Biceps* whose Two Heads or Tendinous Beginnings are here Express'd; the one Arising from the *Processus Coracoides* (H) call'd the Internal Head, the other Springing from the Upper-part of the Brink of the *Acetabulum Scapulae* under the broad Ligament of the Articulation, and is call'd the External Head, passing in a *Sulcus* or Channel on the Head of the Arm-Bone (*Vide Tab. 96. Fig. 1. D, E.*) wherein it's inclos'd by a Proper Ligament: In its Descent becomes Flethy, and joins with its other Head, Composing a Large Flethy Muscle, which becomes Less near the Articulation of the Cubit with the Shoulder-Bone, and presently Growing perfectly Tendinous, which Tendon is again Divided into Two; the External being Thin, passes over the *Musculus Pronator Radii Rotundus*, and makes an External Inclosure to all the Muscles on the Cubit. (*Vide App. Fig. 1. m.*) The Internal (which is Short Thick and Round, as it is here Express'd) is fastned to a Protuberance near the Upper-part of the *Radius*. (*Vide Tab. 96. Fig. 6. A.*) When this Muscle Acts, it Bends the Arm: Besides its common Office to which its Lower External Tendon also more Advantageously Contributes, by how much the more it Approaches towards the other Extream of the *Radius* from the *Os Humeri*: This Lower Tendinous Expansion, by us call'd *Fascia Tendinosa*, has also a further Use in Corroborating the Muscles of the *Carpus* and Fingers in their Strenuous Actions, whose Office we have Endeavour'd to Explain in our Treatise of the Muscles, where an Extraordinary Case in Practice, relating to this Muscle, is Explain'd. *Vid. Myotomia Reformatata*, Pag. 149.

K K, The *Brachieus Internus*: It Arises Flethy from the Internal Part of the *Os Humeri* at the Terminations of the *Deltoides* and *Musculus Coracobrachialis*, and Descending over the Juncture of the Cubit with the *Os Humeri*, it's Inserted partly Flethy and partly Tendinous to the Superior and Fore-part of the *Ulna*, and Part of the *Radius*, as this Figure Expresses; which Latter I must confess I never yet Observ'd in Nature. It Bends the Cubit.

L, Part of the *Brachieus Externus*.

M, The Internal Protuberance of the *Os Humeri*.

N, The *Ulna*.

O, The *Radius*.









T H E SIXTY-SIXTH TABLE.



IVERS Muscles of the Arm and Cubit.

A, The *Biceps* free'd from its Subjacent Muscles.

B, The *Brachialis Internus in Situ*.

C, D, E, The *Biceps Externus* or *Gemellus*: It has a Twofold Origin; the First (C) or Superior, Arises Tendinous from the Superior Part of the Inferior *Costa* of the *Scapula* Internally, and Marching out from between the Two Round Muscles, soon Grows Fleishy, and joins with its Second Beginning (D), which Arises Broad and Fleishy from the Upper and Back-part of the *Os Humeri* under the *Deltoide* Muscle; soon after the Conjunction of these Two Heads, it becomes Externally Tendinous (E), and is so Im-

planted to the Superior and External Part of the *Ulna*, call'd *Olecranon*, *Ancon*, or the Elbow. Its Office is to Extend the Cubit, which it do's the more Advantageously, by how much the more it is Intertext with Various Orders of Fibres. Hence it comes that Tumblers when they stand on their Hands, can by the sudden Extension of their Cubits, immediately return to their Feet.

F, The *Infraspinatus*: It lieth below the Spine of the *Scapula*; It Arises Fleishy from the Inferior Part of the *Basis Scapulae*, also from its Spine and Inferior *Costa* (in those Bodies in whom the *Teres Minor* is wanting, as I am apt to think, it was in the Subject by which this Figure was taken) whence Marching in a Triangular Form according to the Figure of the Bone, it's Inserted to the Upper-part of the Head of the *Os Humeri*. This moves the Arm directly Backwards.

G, The *Supraspinatus*, it being plac'd above the Spine of the Shoulder-blade. It Arises Fleishy from the Superior Part of *Basis Scapulae* that's above the Spine, as also from the Spine and *Costa* Superior of the Shoulder-blade, and hence Marching between the *Processus Coracoides* and *Anchoriformis*, becoming Tendinous as it Marches over the Junction of the *Humerus*, and is so Inserted to the most Superior Part of the Shoulder-bone. It's Office is to lift the Arm Upwards and somewhat Backwards towards the *Occiput*.

H, The *Spina Scapulae*.

II, The *Clavicula*.

✱ The *Subclavian* Muscle, free'd from the first Rib and remaining on the *Clavicula*.

K, The *Rotundus Major*.

L, The *Os Humeri* made bare.

M, The External Protuberance of the last nam'd Bone, whence the Extending Muscles of the *Carpus* and Fingers do Arise.

N, Part of the *Supinator Radii Brevis*, as it Arises from the *Ulna*, and passes over the Upper-part of the *Radius*.

O, The *Ulna*.

XX, The *Deltoideus* Arising from above one Third of the Inferior and External Part of the *Clavicula* (II), where it is intirely Fleishy; it also Arises partly Fleishy and partly Tendinous, from the whole Inferior Margin of the *Spina Scapulae* (H), from hence Descending, soon becomes Thick and Fleishy, Growing still Narrower, till it is Inserted by its partly Fleishy and partly Tendinous *Apex*, to the Middle of the *Os Humeri* (L). This draws the Arm either directly Upwards, or somewhat Forwards, or Backwards according to the Direction of its differing *Series* of Fibres.



T H E

SIXTY-SEVENTH TABLE.



OME of the Muscles Employ'd in Bending the Fingers and *Carpus*.

A, B, C, D, E, The *Perforatus*, or *Sublimis*, or *Flexor Secundi Internodii Digitorum*, Dissected from its Original: It Arises partly Fleshy and partly Tendinous, from

the Internal Extuberance of the *Os Humeri*, between the *Flexores Carpi*: It has also a Disgregated Fleshy Origination from the Fore-part of the *Radius*, between the *Pronator Radii Teres*, and *Flexor Pollicis Magnus*, soon Composing a Fleshy Belly, Lessens its self where it begins to Divide into Two Parts, each of which being again Subdivided, makes Four Roundish Tendons (cccc), included in their Proper Mucilaginous Membranes, and pass under the Annular Ligament of the *Carpus* thro' the Palm: Near the First Internode of the Fingers, each of these Tendons are again Divided or Perforated (E), to admit the Tendons of the following Muscle to pass thro' 'em; these Tendons joining again, are Inserted to the Superior Parts of the Second Bone of each Finger.

F, G, H, I, &c. The *Perforans in Situ*; it's also call'd *Profundus* and *Flexor Tertii Internodii Digitorum*: It Arises Fleshy from near Two Thirds of the Superior and Fore-part of the *Ulna*, and Internal Edge of the *Radius*, as also from the Ligament between the *Radius* and *Ulna*; it becoming a Large Thick-Bellied Muscle; it Grows Outwardly Tendinous before it passes over the *Pronator Radii Quadratus*, where Dividing into Four Round Tendons, which March under those of the *Perforatus* (last Describ'd) beneath the Transverse Ligament of the *Carpus*, where the Lumbrical Muscles M, M, M, M, are said to Arise: These Tendons pass the Palm H, H, H, H, and run thro' the Tendons of the former Muscle and proceeding over their Extremities, Terminate in the Superior and Fore-part of the Third Bone of each Finger I I I I.

The Tendons of the First of these Two last Describ'd Muscles A, B, C, D, being Perforated E, to Transmit those of the Inferior Muscle F, H, and to their Insertions I, &c. is a no less Useful than Stupendous Artifice in Nature: For since its requisite the Fingers should be Bended with a considerable Strength, and each of their Internodes should be Accommodated to different Tactile Bodies, it was therefore Necessary the Muscles employ'd in that Action, should not only be Large, Proportionable to the Force required; but that each Internode should be Furnish'd with a Particular Instrument. The Internal Protuberance of the *Os Humeri*, being a Necessary place for the Rise of Part of these Muscles; but upon the Account of Bending the Cubit, the Extreams

of that Part of them might suffer some Approximation; it was therefore thought fit, that Place should be allotted to the Bender of the Second Internodes of the Fingers, to which not so much Force is requir'd, as to the Bender of the Third Internodes; for the Fingers like so many Leaves are more effectually mov'd, when the *Vis Movens* is fastned to their Extreams, which is their Third Internodes; wherefore the Strongest Muscles are there Inserted: Now the Origin of the Superior Muscle being confin'd to the Internal Extuberance of the *Os Humeri*, and Part of the *Radius* only, these Places could not Furnish Spaces for a Muscle so Large as that of near Two Thirds of the Superior and Forepart of the *Ulna*, Internal Edge of the *Radius*, and Intermediate Ligament of the Bones of the Cubit, whence the Inferior Muscle Springs: Hence it Appears the Inferior Muscle is much Stronger than the Superior; wherefore the Tendons of the Latter are Perforated, to Transmit those of the Former in a right Progress to their Terminations, at the Extremities of the Fingers: Nor is this Constructure only Advantageous in Bending the Fingers only; but if the External Muscle should be Divided Transversely, as I have sometimes seen it; yet the compleat Flexion of the Fingers has nevertheless been perform'd by the Internal Muscle; which is a provident Contrivance in Nature.

K K, The Mucilaginous Membranes which Involve the Tendons of the *Perforans*, those of the *Perforatus* not being Express'd in this Figure.

L L, The *Ligamentum Transversum*, or *Annulare* Divided.

M M, The *Lumbricales*, or *Flexores Primi Internodii Digitorum*. The Originations and Progress of these are here so well Express'd, that they need no other Description.

N N, &c. The Tendons of the Lumbrical Muscles passing to their Terminations, with the *Musculi Inter-Ossei*.

O O, The Annular Ligaments of the Fingers Open'd, which keep in the Bending Tendons, when they Act.

P, The *Abductor Pollicis*.

Q Q, The Tendon of the *Flexor Pollicis Longus*.

R R, *Flexor Secundi Internodii Pollicis*.

S, The Trunk of that Nerve whose Branches are Propagated to the Fingers.

T, The Long Tendon and Bellied Part of the Muscle *Palmaris*.

V, The *Radialis Flexor*.

W, Part of the *Ulnaris Flexor*.

X, Part of the *Supinator Radii Longus*.

Y, The Artery whose Pulsation is commonly Felt near the *Carpus*.

Z, *Pronator Radii Quadratus*, partly in Sight.

*, The Internal Protuberance of the *Os Humeri*.

†, *Pronator Radii Teres*.

‡, The Lower Part of the Bicipital Muscle.





T H E SIXTY-EIGHTH TABLE.



H E Muscles Bending the Fingers, Thumb, Carpus, &c. Rais'd from their Originations, and left at their Insertions.
a, The *Perforatus*.
b, The *Perforans*.
c c, &c. The *Lumbricales*.
d, d, The Six *Inter-Ossei*

Muscles free'd from between the Metacarpal Bones, and left at their Insertions in Conjunction with the Tendons of the *Extensor Digitorum Communis*. These draw the Fingers to each other, and Assist in Extending them.

e, The Fore-finger.

A, The *Pronator Radii Teres*, or *Rotundus* : It Arises from the Internal Protuberance of the *Os Humeri*, and in its Oblique Descent, Cleaves to the *Flexor Carpi Radialis*, Lessening its self at its Insertion a little above the Middle of the *Radius* Externally. Its Name declares its Office, and Figure.

B, The *Pronator Radii Quadratus*, or *Inferior Quadratus* : It Arises from the Lower and Inner Part of the *Ulna*, and passes Transversely over the Ligament, joining the *Radius* to the *Ulna*, and is Inserted to the Superior and External Part of the *Radius*. Its Name intimates its Use, and Figure.

C, The *Supinator Radii Longus*.

D, The *Supinator Radii Brevis* ; left at its Insertion, which is here truly Exprest.

E, *Flexor Carpi Radialis* : It Arises Flethy from the Internal Protuberance of the *Os Humeri*, Cleaves to the *Pronator Radii Teres A* ; in Half its Progress, becomes Tendinous, and runs under the Annular Ligament, and is Inserted to the Upper Part of the *Os Metacarpi* ; which Sustains the Fore-finger as here Exprest.

F, The Little Finger.

G, The First Bone of the Thumb made bare.

H, The *Adductor Pollicis ad Dorsum Manus*, and *Adductor Indicis* Rais'd both together.

I, K, The *Adductor Minimi Digiti* : This we have often seen, as its here Represented, Divided into Two, and sometimes Three Distinct Muscles, and each of a differing Order of Fibres : It Arises First from the *Ligamentum Transversale*, and Fourth Bone of the *Carpus* ; Secondly from the Third Bone of the *Carpus* ; Thirdly and Lastly from the Superior Part of the Subjacent *Os Metacarpi* : The Two First, Terminate at the Superior Part of the First Bone of the Little

Finger Forwards : The Latter Ends at the same Part of the said Bone Internally and Laterally.

L, The *Flexor Pollicis Longus* : This we have Observ'd to have a Twofold Beginning ; the First and Superior of which is Sharp, but soon Grows Flethy at the Internal Protuberance of the *Os Humeri*, between the *Perforatus* and *Perforans* : This Flethy Body becoming Tendinous, again joins with the Middle Tendon of its other Large Head. The Second and Inferior Origin of this Muscle is that Part of it commonly Describ'd and here Figur'd. It Arises with a Double Order of Flethy Fibres from immediately below the Superior Part of the *Radius*, which Unite in a Middle Line or Tendon, not unlike the *Fibrillæ* of a Feather joining to their *Stamina* ; and before it passes over the Articulation of the *Carpus*, and under the Transverse Ligament, it Composes a somewhat Flat Strong Tendon, running in an Interstice in the *Musculi Flexor Primi*, and *Secundi Internodii Pollicis*, to its Implantation at the Superior Part of the Third Bone of the Thumb.

M, P, O, *Flexor Primi & Secundi Ossis Pollicis* : It Arises from the *Ligamentum Transversale Carpi*, and Bones of the *Carpus* at the *Basis* of the *Mons Lunæ*, and *Os Metacarpi* that Sustains the Middle Finger, and is Inserted to the *Offa Sessamoidea* of the Second Internode, and partly to the First Bone of the Thumb. Its Actions are Various according to the Diversity of its Series of Fibres. So it Bends the First and Second Bones of the Thumb either Directly or Obliquely towards the *Carpus* and *Vola Manus*.

N, N, &c. The *Adductor* and Part of the *Flexor Secundi Internodii Pollicis* Rais'd together.

Q, The *Ulnaris Flexor Carpi* : This like the *Radialis* derives its Origin from the Internal Protuberance of the *Os Humeri*, as also from the Superior and External Part of the *Ulna*, and is partly Inserted in some Subjects to the Fourth Bone of the *Carpus* ; but most commonly it passes farther on, and runs under the Transverse Ligament, and is Implanted to the Upper Part of the *Os Metacarpi* that Sustains the Little Finger. Its Name denotes its Employment.

R, The *Biceps* left at its Insertion to the *Radius*.

S, The *Brachæus Internus*.

T, The Internal Tubercle of the *Os Humeri*.

V, The *Ulna* made bare.

W, The *Radius*.

X, The Ligament between the *Ulna* and *Radius*.



T H E SIXTY-NINTH TABLE.



REPRESENTS the External Muscles lying on the Cubit, imploy'd in Extending the Fingers, Thumb and *Carpus*.

The Skin with the Parts annex'd, Rais'd.

B, The Elbow, which *Bidloo* Erroneously calls the External *Apophysis* of the *Os Humeri*.

C, The External Protuberance of the *Os Humeri*, which *Bidloo* (in like Manner) calls the Internal *Apophysis* of that Bone.

D, F, The *Radialis Extensor Carpi* : This has Two Beginnings, and does indeed represent Two distinct Muscles; The Uppermost (F) arises immediately above the External Protuberance of the *Os Humeri*, below the *Supinator Radii Longus*; The other Beginning is beneath the former, either from the *Apex* of the Extuberance of the *Os Humeri*, or Superiour Part of the *Radius*. Both its Tendons, marching under the *Extensores Pollicis*, run under the Annular Ligament, and are Inserted to the Superiour Part of the *Ossa Metacarpi* of the Fore and Middle Fingers. *Vid. Tab. 71. F, I.*

E, The *Extensor Carpi Ulnaris* : This Arises from the External Protuberance of the *Os Humeri*, as also from the Upper Part of the *Ulna*, and is Inserted to the Metacarpal Bone of the Little Finger. If this and the *Ulnaris Flexor*, Act, they move the Hand Sideways towards the *Ulna*; and in like Manner, if the *Radialis Flexor* and *Extensor*, Act, they move it towards the *Radius*.

G, *Extensor Digitorum Communis*, by some call'd *Cnemodactilius*; It springs from the Outward Extuberance of the *Os Humeri* between the *Extensores Carpi*, and its Tendons pass under the Annular Ligaments between the Lower Parts of the *Ulna* and *Radius*, marching separately over the Back of the Hand, do transmit Tendinous Filaments to each other, before they pass the First Internodes of each Finger, and are Inserted to the First, Second, and Third Bones of the Fore, Middle and Third Fingers. There being no Force requir'd in Extending the Fingers, we need not wonder that the Muscles imploy'd in that Office are no larger in Proportion to their Antagonists.

H, The Extending Muscles of the Thumb, which are distinctly Express'd in the following Tables.

I, Part of the Tendon of the *Musculus Indicator*.

K Inferior, *Abductor Minimi Digiti*.

K Superior, The Lower End of the *Ulna*, next the *Carpus* B, its Upper Part call'd *Olecranon*.

L, The Annular Ligament.

M, *Extensor Minimi Digiti*, Describ'd in the following Table.

N, Part of the *Ulnaris Flexor*.

O, The *Anconæus* : It Arises Fleishy from the Inferior and Back Part of the *Os Humeri*, and growing Thicker as it Marches between the Superior Ends of the *Ulna* and *Radius*, is Inserted to the lateral Part of the *Ulna*, a Thumbs Length below the *Olecranon*, or Elbow. This Assists in Extending the Cubit.

P, Part of the *Supinator Radii Longus* : This Arises Broad and Fleishy from the External Part of the *Os Humeri*, Three Finger's Breadth below the Termination of the *Deltoides*; and Descending Obliquely, it gradually lessens its self, and makes a Flat, Broad Tendon, which likewise grows Narrower till it's Inserted to the External and Inferior Part of the *Radius*, near the *Carpus*. *Vid. Tab. 68. C.*

Q, Part of the *Gemellus*, which is sometimes continuous with the *Anconæus*.

R, Part of the *Brachæus Internus*.

S, Part of the *Biceps Cubiti*.







T H E

SEVENTIETH TABLE.



IVERS Muscles which Extend the *Carpus*, Fingers, and Thumb; somewhat Separated from each other and Rais'd.

A, The First Internode of the Fore-Finger.

B, The First Internode of the Little-Finger.

C *Inferior*, The Second Internode or Bone of the Thumb.

C *Superior*, The *Musculus Extensor Tertii Internodii Pollicis*:

This has a Broad partly Fleshy Origination from the *Ulna*, immediately below the Beginning of the *Extensor Primi Internodii*, or between it and the *Judicator*, as also from the Ligament between the last nam'd Bone and *Radius*, whence Descending Obliquely becomes Tendinous, as it Marches in a Proper *Sinus* on the Inferior *Appendix* of the *Radius*, wherein it's Enclos'd by an Annular Ligament, passing over the Two Tendons of the *Radialis Extensor*, to its Implantation at the Superior Part of the Third Bone of the Thumb.

DD, The *Extensor Digitorum Communis*.

EF, &c. Its Tendons passing over the First and Second Joints of the Fingers, here supported with a Pen.

GG, The *Radialis Extensor* stretch'd out with a Pair of Compasses.

HH, The *Ulnaris Extensor*.

I, The *Anconæus*.

K, The *Extensor Minimi Digiti Proprius*: This Arises partly Tendinous at the Extremity of the External Protuberance of the *Os Humeri*, and partly Fleshy from the Superior Part of the *Ulna*, between the *Extensor Communis Digitorum*, and *Ulnaris Extensor*; and becoming Tendinous as it passes under the *Ligamentum Annulare* at the *Carpus*, where it is Divided into Two, sometimes Three Tendons, which are again United near their Insertions to the First, Second, and Third Bones of the Little Finger.

L, Part of the *Ulnaris Flexor*.

M, The Upper *Epiphysis* of the *Ulna*.

N, The *Musculus Judicator*, or *Extensor Judicis Proprius*: This Arises Fleshy from the External Part of the *Ulna* next the *Radius*, immediately below the *Extensores Pollicis*, and in its Oblique Descent becomes Tendinous, Running under the Annular Ligament on a *Sinus*, in the Lower Part of the *Radius*, and passes over the *Os Metacarpi Judicis*, joins with the Tendon of the *Extensor Communis Digitorum*, and is Inserted with it.

OO, The *Extensores Secundi & Tertii Internodii Pollicis*.

P, The Lower Part of the *Ulna*.

QQQ, The *Inter-Ossei*.

R, The *Abductor Minimi Digiti*.

S, The *Adductor Pollicis ad Dorsum Manus*.



T H E
SEVENTY-FIRST TABLE.



HEWS the Muscles Employ'd in Extending the *Carpus*, and Fingers, Rais'd, and left at their Insertions.

A, The *Radius* made bare.

B, The *Ulna* made bare.

C, The Upper End of the *Radius*, Articulated with the *Os Humeri*.

D, The Ligament joining the *Ulna* and *Radius* together.

E, The *Musculus Ulnaris Extensor*.

F, I, c c, *Radialis Extensor* : I, by *Bidloo* is Erroneously call'd *Extensor Judicis*.

G, *Supinator Radii Brevis* : The Origin of this Muscle is here well Express'd and its Insertion, *Tab. 68. D.*

H, Part of the *Extensor Digitorum Communis*.

K, *Extensor Minimi Digiti Proprius*.

L Superior, *Extensor Tertii Internodii Pollicis*.

M M, The Bones of the *Carpus*.

N N N, The *Ossa Metacarpi*.

O O, *Extensores Primi & Secundi Internodii Pollicis*, which derive their Originations from the *Ulna*, like the *Extensor Tertii Internodii*, and are Inserted to the respective Bones of the Thumb.

P, Part of the *Extensor Communis Digitorum*, together with the *Judicator*.

Q, The Tendinous Origin of the *Ulnaris Flexor*, cut from the *Ulna*.

R, The Ligament Rais'd which Incloses the *Ossa Carpi* at their Articulations, with the *Radius*.

S, The *Adductor Pollicis ad Dorsum Manus* : It Arises from the Lower Part of the *Os Metacarpi* of the Fore-finger, and Descends Obliquely to its Broad Termination at the Superior Part of the First Bone of the Thumb.

T, The *Abductor Minimi Digiti*.

V V V, The *Inter-Ossei*.







T H E SEVENTY-SECOND TABLE.



AS the Arm, Cubit, and Hand are comprehended under the Title of the Whole Hand; so the Thigh, Leg and Foot, are in common call'd, the Foot. The Bones of those Parts are Represented, *Tab. 103, 104, 105.* where we shall speak of the particular Denominations of the Parts last mention'd: Our Business at present being to Explain the Muscles which move the Bones; First of the Muscles which move the Thigh-Bone. The Skin and Fat of the Buttocks being Rais'd, the Muscle which First offers its self to View, is the *Gluteus Major*, here Rais'd and laid aside to shew its Inferior Surface (A.) The Superior or External Surface of this Muscle Appears Compos'd of divers Muscles, in whose *Interstitia* the Fat is Inserted, and requires an Artificial Management of the Knife in freeing the Muscle of it, so as to leave no Part of the Fat behind, nor Wound the Flethy Fibres of the Muscle.

A, BB, C, The *Gluteus Major* Rais'd and Turn'd Downward. This Muscle is not well Describ'd by *Anatomists*, they only mentioning its Flethy Part here Exprest; besides which, it has a Large Broad Tendinous Part, Springing from the Whole External Margin of the Spine of the *Os Ilium* (O O) next the *Musculus Communis* of the *Membranosus*, whence Marching over the External Part of the *Gluteus Medius* (D); at the Great *Trochanter* (E E), it meets with the Flethy Part of this Muscle, Arising from the Posterior Part of the Spine of the *Os Ilium*, hindermost Part of the *Sacrum* Laterally, and *Os Coccygis*, and Cleaving to the Broad Ligament that's Extended between the Two last mention'd Bones and Tubercle of the *Os Ischium*; its Flethy Fibres Descend Disgregately in an almost Semicircular Manner, and become Tendinous as they approach the Great *Trochanter* where it's United with its First Describ'd Tendinous Beginning, which together Descending over the Great *Trochanter*, joins with the Tendon of the *Membranosus* (of which hereafter,) and proceeds to Frame a Large, Thick, Strong Tendon (C.) Inserted to the *Linea Aspera* on the Back of the *Os Femoris*, near Four Fingers Breadth below the Great *Rotator*.

The First Describ'd Tendinous Origin of this Muscle, do's not only serve to support its Flethy Body, but its Fibres Extending themselves, Intersect those of the *Membranosus* as they Cover all the Muscles of the *Tibia*, do more Adequately Include those Muscles, and Corroborate them in their Actions; as we have elsewhere Observ'd of the Muscles of the Cubit and Fingers. When this Muscle Acts, it draws the Thigh directly Backwards.

I was lately Consulted in the Case of a Fistulous Ulcer a little above the Great *Trochanter*; the *Sinus* tended Upwards, and was at least Two Inches Deep from the Surface of the Skin, and about Three Inches in Length: I could Discover the Bottom of the *Sinus* to be very hard like a Cartilage; nor was it at all sensible to the Touch of the Probe, as the Patient

Inform'd me; but on the contrary, told me, *I than seem'd to Grate against the Bone.* The *Sinus* had been divers times Open'd, and the hard Body at the Bottom of it laid bare, but the Wound could not be Cicatric'd: I Open'd it again, and afterwards cut out the hard Cartilaginous Body which Cover'd the External Part of the *Gluteus Medius*; the Wound afterwards Incarn'd, and was Cur'd in a few Days. This Preternatural hard Body was Fram'd in the First Describ'd Tendinous Part of the *Gluteus Major*, and the Blood-Vessels would not Spring from it to afford Incarnation; nor would common Escharoticks Act on it, wherefore it continued to lie Bare; but after cutting it out thro' the Blood-Vessels from the Subjacent Muscle; the *Gluteus Medius* Sprung up, and join'd with those of the Membranes under the Skin, by which means a Confirm'd *Cicatrice* was made. By this we may be Inform'd how Useful Anatomy is in Surgery.

The like Case may happen on the Tendinous Expansion of the Inferior Part of the *Membranosus*, on the Muscles of the *Tibia* and *Tarsus*, where dividing it only according to its Length may be sufficient.

D, E E, F, *Gluteus Medius*: This lies chiefly under the Tendinous Beginning of the *Maximus*, Arising Flethy from almost the Whole External Part of the Spine of the *Os Ilium*, whence Descending becomes Thicker and Flethy, and is Inserted (in a Semicircular Manner E E) by a Short Strong Tendon, to the Superior and External Part of the Great *Trochanter*.

This Muscle is not only Employ'd in Extending the Thigh, but is chiefly Serviceable in Turning it Inwards; and this Action of it will Manifest it self, if in Time of Dissection you give the Thigh that Motion as it lies on the Table; you may then Observe the Fore-part of this Muscle Notably Relax; and in Living Persons when the Thigh is turn'd Inwards, you may see the Fore-part of this Muscle Tumified, which ought to be taken Notice of by Painters; or, if in Performing that Action with your own Thigh you lay your Thumb on this Muscle, you may easily Feel it move under the Skin: Besides these Actions, it's also Employ'd in Straddling or Pulling the Thighs and Legs from each other; it Co-operating with the *Musculus Membranosus* in that Action.

- G, Part of the *Triceps*.
- H, The *Pyriformis* or *Iliacus Externus*.
- I I, Part of the *Marjupialis*.
- K, The Great Crural Nerve.
- L, The *Appendix* of the *Os Ischium*, whence the Muscles Bending the *Tibia* and *Musculus Quadratus* do Spring.
- M, A Ligament Protended from the *Os Sacrum* to the Tubercle of the *Ischium*, or *Os Coxendicis*.
- N, Part of the *Os Sacrum*.
- O O, The Spine of the *Os Ilium*.
- P, The Great *Trochanter*.
- Q, Part of the *Vastus Externus*.
- R, The Upper Head of the *Biceps Femoris*.
- S, The Beginning of the *Seminervosus*.



T H E

SEVENTY-THIRD TABLE.



IV E R S Muscles of the Thigh, &c.

A, The *Glutæus Major*.

B, The *Medius*; both being Rais'd and left at their In-
tersections.

C, The *Glutæus Minor in Situ*: It has a Semicircular Broad Beginning from the *Dorsum Ossis Ilii*, whence its Flethy Fibres Descend to their partly Flethy and partly Tendinous In-
tersection, at the Superior Part of the Root of the Great *Trochanter*.

This Performs the same Office with the *Medius*, mention'd in the Description of the preceding Table.

D, F, G, I, The *Pyriformis*, by some call'd *Iliacus Externus*, by others *Quadrage-
minus Primus*: It Arises Round and Flethy from the Inferior and Internal Part of the *Os Sacrum*, within the *Pelvis* of the *Abdomen*, Descending from thence Oblique-
ly in the Great *Sinus* of the *Os Ilium* (Tab. 99. Fig. 2. F) above the Acute Process of the *Ischium* (*Ibid.* G,) and joins with the *Glutæus Medius* before it's Inserted to the Upper Part of the Root of the Great *Trochanter*. This moves the Thigh some-
what Upwards and Turns it Outward.

E, The *Os Sacrum*.

H, That Part of the *Marsupialis*, call'd the *Marsupium*.

K, The Tubercle of the *Os Ischium*.

L, The Back-part of the *Os Ilium*.

M, The Great *Trochanter*.

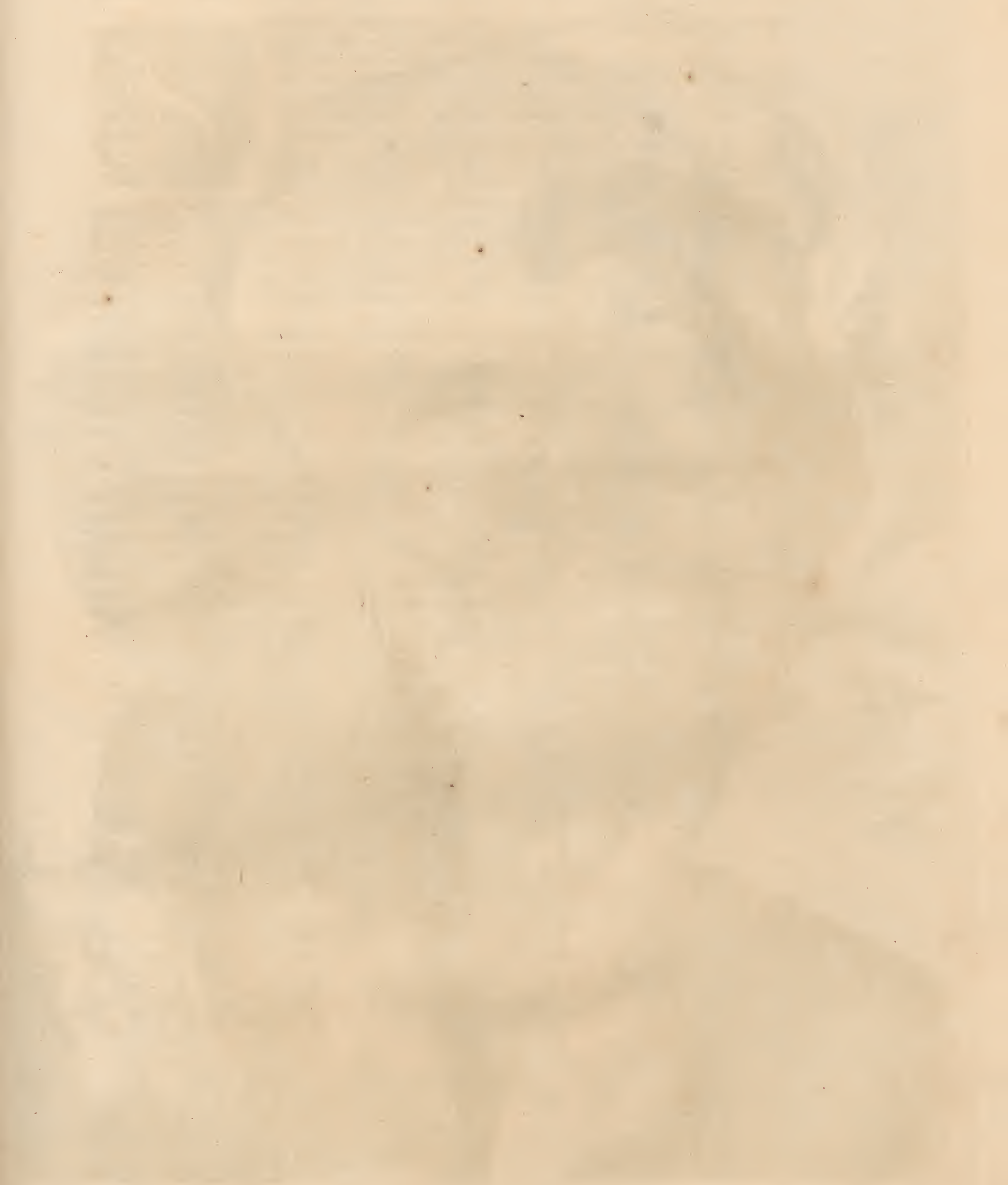
N, The *Musculus Quadratus Femoris*: It Arises Broad and Flethy from the *Epi-
physis* of the *Os Ischium*, and passes Transversely of an equal Breadth and Thickness to its partly Flethy and partly Tendinous Implantation, at the Posterior Part of the *Os Femoris*, below the Great *Trochanter*: This turns the Thigh Outwards.

O, Divers Muscles of the *Tibia* near their Origin.





SEVENTYFOURTH PART





T H E SEVENTY-FOURTH TABLE.



SEVERAL Muscles Imploy'd in Moving the *Os Femoris*, Rais'd from their Originations, and left at their Insertions.

- A, The *Glutæus Major*, scarcely Appearing under the *Medius*.
- B, The *Glutæus Medius*, } Free'd from their Originations, and left at their
- C, And *Minor*, } Insertions.
- D, The *Iliacus Externus*, or *Pyriformis* hanging at its Insertion.
- E, Part of the *Triceps*.

F, G, The *Marsupialis* or *Bursalis*, by some call'd *Obturator Internus*: It Arises Broad and Fleshy from the *Os Ilium*, *Ischium*, *Pubis*, and Ligament that's Extended in the Great *Foramen* of the Two last nam'd Bones

Internally ; whence passing Transversly, it's Inflected on the *Sinus* of the *Ischium* N ; on each Side of which, namely the Acute O, and Obtuse Process P, Arises its Second Fleshy Body, call'd *Marsupium* G ; which, Covering the Tendons deriv'd from its former Origin, Descends Obliquely with them to their Insertion at the Superior Part of the Root of the Great *Trochanter*.

When this Muscle Acts, the Great *Trochanter* is directed towards that Part of the *Ischium* N, whereon its Tendons are Inflected, not unlike a Pulley ; by which the *Os Femoris* is turn'd Outwards.

H, The *Obturator Externus* cut from its Origin at the Great *Foramen* (R) of the *Os Ischium* ; its Name is deriv'd from its Situation, its call'd *Rotator Femoris Extrorsum* from its Use ; it has a Large Fleshy Beginning from the External Parts of the *Os Ischium*, *Pubis*, and Membrane that Covers the *Foramen* Externally, (opposite to the Origin of the *Marsupialis*) passing Transversly Backwards, Lessens its self, and Grows Tendinous at its Implantation to the Root of the Great *Trochanter*.

I, The Head of the *Os Femoris* lying out of the *Acetabulum*, after the *Ligamentum Latum* is cut off.

K, The Round Ligament of the *Os Femoris* which is Fasten'd to the Inferior Part or Margin of the *Acetabulum* ; whereby the Great Attrition of the Superior Part of the *Acetabulum*, with the Head of the *Os Femoris*, is prevented in Walking, Running, and the like Actions.

L, The Mucilaginous Gland Entertain'd in a particular Depressure in the Bottom and Lower Part of the *Acetabulum* ; whereby the too Great and often Compressure of the Mucilage in Ordinary Motions of the Thigh, is Prevented.

M, Some Remains of the Mucilaginous Glands on the Neck of the *Os Femoris*, near the Conjunction of the *Ligamentum Latum* ; which is here taken off, to shew the Head of the Thigh-Bone and *Acetabulum* of the *Os Coxendicis*.

N, The *Os Ilium*.

O, The *Os Sacrum*.

P, The *Coccygis*.

Q, The *Sinus* of the *Os Ischium* in which the Tendons of the *Marsupialis* pass.

R, An Acute Process of the *Ischium*.

S, The *Appendix* of the *Ischium* whence Springs the Bending Muscles of the *Tibia*.

T, The Lower Margin of the *Os Pubis*.

U, The Great *Foramen* of the *Os Ischium* and *Pubis*.



T H E SEVENTY-FIFTH TABLE.



EXPRESSES divers Muscles of the *Tibia*, and some of those of the Thigh.

A, B, C, The *Sartorius*, or *Fascialis Longus*, seu *Longissimus Femoris*: It arises Sharp and Fleishy from the Fore-part of the Spine of the *Os Ilium*, close by the *Musculus Communis* of the *Membranosus*, and Descending Obliquely Inwards on the *Rectus*, and *Vastus Internus*, and over Part of the *Triceps* of an unequal Breadth and Thickness; it meets with the *Gracilis* below the Middle of the Thigh Internally, and Accompanies it in its Passage over the Internal and Inferior Head of the Thigh-bone; where it becomes Tendinous as it passes under the Strict Inclosure of the *Fascia Lata*, and is Inserted Four Fingers Breadth below the Superior Part of the *Tibia* Internally; it's Employ'd in moving the Thigh and *Tibia* Upwards, somewhat Forwards, and Inwards; in which Actions, the Upper-part of this Muscle Appears thro' the Skin, which ought to be observ'd by *Painters*, and *Sculptors*.

D, E, F, The *Gracilis*: It Arises somewhat Broad, partly Tendinous and partly Fleishy from the *Os Pubis* Internally, between the Two First Heads of the *Triceps*, and in its straight Descent on the Inside of the Thigh, Lessens it self, becoming Tendinous a little above the Tendon of the last Describ'd Muscle, and is so Inserted immediately beneath it to the *Tibia*.

It Assists the Flexors of the *Tibia*.

G, The *Rectus*: It Arises Fleishy from a Prominence of the *Os Ilium*, between the Fore-part of its Spine and *Acetabulum*, (Tab. 99. Fig. 1. I.) thence Descends directly between the *Vastus Externus*, and *Internus*, over the *Crureus*: Its Fibres Externally Descend from a Middle Line Obliquely Laterally; Internally they pass according to its Length, and become entirely Tendinous Four Fingers Breadth above the *Patella*, where it's United with the Tendons of the Two *Vasti* and *Crureus*, and is Inserted with them to the *Tibia*.

It Assists in Extending the Leg, as also in drawing the Thigh and Leg Upwards.

H, The *Vastus Internus*: It Arises partly Ten-

dinous and partly Fleishy, at the *Linea Aspera* on the Back-part of the *Os Femoris*, from immediately below the Lesser *Trochanter*, to Three Fingers Breadth above the Inferior *Appendix* of that Bone Internally and Laterally; whence its Fleishy Fibres Descend in an Oblique and almost Semicircular Manner, and on a sudden becoming Tendinous, joins with the Tendon of the *Rectus*, *Vastus Externus*, and *Crureus*, and is Inserted to a Prominence on the Upper and Fore-part of the *Tibia* after joining with the *Patella*. Its Office is the same with the last nam'd Muscles.

I, The *Vastus Externus*: Its Origin Externally is Tendinous, Internally Fleishy from the Lower-part of the Great *Trochanter*, and Exterior Part of the *Linea Aspera* of the *Os Femoris*; whence its Fibres Descend Obliquely Forwards, and on the contrary become Outwardly Fleishy and Tendinous Internally, and immediately becomes perfectly Tendinous, joining with the Tendons of the Two last Treated of Muscles, and is Inserted with them (after joining with the *Rotula*) to the *Tibia*, as is above mention'd.

K K, Parts of the *Triceps*.

L, The *Pectineus*, by some call'd *Lividus* and *Flexor Femoris*; it has a Thick Broad Fleishy Origin from the External Part of the *Os Pectinis*, or *Pubis*, between the *Musculus Lumbalis*, together with the *Iliacus Internus*, and Second Head of the *Triceps*; whence Descending Obliquely Backwards, becomes a Flat Strong Tendon near its Implantation to the Asperity, on the Posterior Part of the *Os Femoris*, immediately below the Lesser *Trochanter*, and the Termination of the *Psoas*. This Acting together with the *Psoas Magnus*, and *Iliacus Internus*, do not only Assist those Muscles in drawing the *Os Femoris* Upwards, but by its Oblique Curve Descend from its Origin to its Insertion: It Directs the Thigh somewhat Outwards, which is a provident Contrivance in Nature, least in Walking, the Thigh-bones by their Oblique Position should be Incident to turn Inwards; wherefore this Muscle is more particularly Employ'd in Directing the whole Foot, viz. the Thigh, Leg, and Foot Outwards, in a more Graceful Step.

M, The *Psoas* together with the *Iliacus Internus*, near their Insertions.

N, The *Os Pubis*.









T H E

SEVENTY-SIXTH TABLE.



DIVERS Muscles lying on the Fore-part of the Thigh.

A, The *Musculus Communis* of the *Membranosus*.

B, Part of its Tendinous Expansion Rais'd and Pinn'd out; it's call'd *Membranosus* and *Fascia*

Lata, from its large Membranous Expansion, Comprehending all the Muscles of the *Tibia*, together with Part of those of the Thigh: It hath an Acute Flethy Beginning from the Fore-part of the Spine of the *Os Ilium*, between the Origination of the *Sartorius*, and First Describ'd Tendinous Beginning of the *Glutæus Magnus*, being Dilated to a Flethy Belly after an Oblique Descent, it becomes Tendinous Four Fingers Breadth below the Great *Trochanter*; whence it Descends Directly over the *Vastus Externus*, to its Proper Termination at the Superior *Appendix* of the *Fibula*; but in its Progress thither, it is conjoyn'd with the Tendinous Expansion of the *Glutæus Magnus*, that Arises from the Spine of the *Ilium*, Covering the External Part of the *Glutæus Medius*, and all the External Muscles of the *Tibia*, as well as those of the Thigh-bone, and Descending over the *Patella*, Comprehends all the External Muscles of the *Tarsus* and Toes, and joins with the *Ligamentum Annulare*, which retains the Tendons of the Muscles of the Toes and Foot: Unless it may be suppos'd this *Fascia Lata* should End at the Lower-part of the Thigh-bone, or Superior Parts of the *Tibia* and *Fibula*, and that the last Nam'd Bones should give an Origin to the Inferior Part of the *Fascia*; which seems to be Matter more of Controversie than Use. When this Muscle Acts, it draws the Leg Outwards; its Tendon being join'd with Part of the Tendinous Beginning of the *Glutæus Magnus*, having a differing *Series* of Fibres Intersecting each other, do thereby Compose a Strong *Involucrum*, as well Including all the Common Muscles of the Leg, as Covering the Proper; whereby those Muscles are Corroborated in their Actions.

C, The *Crureus* or *Femoreus*: Its Origination is Large and Flethy on the Fore-part of the Thigh-bone, from between the Greater and Lesser *Trochanter*, as Appears *Tab. 79.* its Fibres Descend directly, and become intirely Tendinous a little below the Upper-part of the Tendon of the *Rectus*, soon joining with that Tendon, together with those of the Two *Vasti*, and Fixing to the *Patella*, is afterwards Implanted to a Prominence at the Superior and Fore-part of the *Tibia*. The Extending Muscles of the *Tibia* are much Stronger than their Antagonists the *Flexors*, as Appears by their Magnitude and Conformation; whether in respect to their Variety of *Series* of Fibres in General, or Triple Order of those of the *Rectus* in Particular, and its Inclosure in the *Fascia Tendinosa*: Nor is this Conformation without some considerable End Design'd by the Author of Nature; for should not the Legs be Extended with a Force Exceeding the Incumbent Weight, we

should be continually liable to an Inflection at the Knees, thro' the Pressure of the Whole Body; much less should we be able to Translate the Body from one Place to another. But the All-wise Architect of Humane Bodies has so Fram'd these Muscles, as not only to make them Useful in Supporting the Whole Body, and rendering them Effectually Serviceable in Walking, Running, and the like: But thro' the great Proportion of Strength of these Extending Muscles of the *Tibia*, they are also Capable (upon Inflection at the Knees) by their sudden Acting to Extend the Legs with such a Force, as to remove the Whole Body from the Place where it stood, as in Leaping: In which Action, the Extending Muscles of the Back, namely the *Sacro-lumbales*, *Longissimi Dorsi*, &c. and the *Gastrocnemii* of the Feet do in like Manner Concur in Extending those Parts: A likeness of which is Represented in a piece of Whale-bone, *Vid. Borell. De Motu Animalium.*

D, Part of the *Sartorius*.

E, The Tendinous Part of the *Gracilis*.

F, A Portion of the *Rectus*, as it Appears hanging down.

G, The *Vastus Internus* Rais'd and hanging down.

H, Part of the *Vastus Externus* in like Manner Dissected.

I, The First and Largest Head of the *Triceps*, which Arises Broad and Flethy from the Inferior Edges and External Parts of the *Os Ischium* and *Pubis*, and Descending with an Oblique Order of Fibres to its partly Tendinous and partly Flethy Insertion to the *Linea Aspera* of the Thigh-bone, immediately below the Implantation of the *Musculus Quadratus Femoris*; the Lower-part of this Head of the *Triceps* Composing a Strong Round Tendon, Inserted to the Superior Part of the Internal and Lower *Appendix* of the Thigh-bone: The Second Head of this Muscle Arises Tendinous from the *Os Pubis*, but in its Descent soon becomes Flethy, and joins with the Former, near its Insertion to the Middle Part of the *Linea Aspera* of the Thigh-bone: The Third and last Beginning of the *Triceps*, Springs from the Inferior Part of the *Os Pubis*, between the Origin of the last Describ'd Head, and *Pectineus*; and Descending Obliquely, joins with the First Head near its Insertion to the *Linea Aspera* of the Thigh-bone, immediately above the Termination of the Second Head. The *Triceps* moves the Thigh Variously according to the Diversity of its Beginnings; so the First Describ'd Part of it draws the Thigh-bone Upwards, Inwards, and somewhat Backwards; the Second and Third Beginnings of it, pulls the Thigh more Inwards, and Turns it somewhat Outwards, as when we put our Legs Across each other.

K, Parts of the *Psoas*, and *Iliacus Internus*.

L, The *Musculus Pectineus*.

M, The *Os Pubis*.

N, The Blood-Vessels of the Thigh Ti'd.

O, The *Patella* or Knee-pan.

P, The Inferior and Internal Part of the Lower *Appendix* of the Thigh-bone.

Q, Part of the *Tibia*.

T H E

SEVENTY-SEVENTH TABLE.



O M E of the Muscles of the Thigh and Leg Dissected from their Originations, and left at their Insertions.

A B C, &c. The *Musculus Biceps Femoris*: B B, Its Two Heads or Beginnings: C, Its Termination.

D, The *Semimembranosus*, which in its Proper Situation is partly cover'd with the *Seminervosus* (E): It has its Tendinous Origin from the Protuberance of the *Os Ischium*, and composing a Broad, Flat Tendon in Half its Progress, on the Back-part of the Thigh it becomes a Round Fleishy Belly, lying under the Long Tendon of the *Seminervosus*: About the Lower *Appendix* of the Thigh-bone (M), this Muscle is converted into a Strong Round Tendon, Running in a Channel on that *Appendix*, and is afterwards Inserted to the Superior and Back-part of the *Tibia*: This Bends the *Tibia*, which Action it Performs the more Advantageously by its Lower Tendons, passing in a Channel on the Inferior *Appendix* of the Thigh-bone; which, as a Pulley not only Directs it in its Office, but renders its Action in Bending the Leg more Vigorous. It must be Granted, that if the Tendon of this *Semimembranosus* had past further on, and Terminated with those of the *Seminervosus*, *Gracilis*, and *Sartorius*, it would have rendred it capable of Performing its Action with Force; but in regard the Number of Tendons here on this Internal Side of the Ham are already Increas'd to Three, the Fourth could not well be admitted without some Inconveniency, either in Performing its Office together with the Rest, or in the Figure of the Part: Besides it seems to be no small Artifice in Nature, as well here in the Leg, as in the Arm, to Furnish both with Proper Muscles, which should Gradually Bend them: Thus the Shorter Beginning of the *Biceps Femoris* and the Muscle now Treated of, are Analogous to the *Brachialis Internus*, *Flexor Cubiti*; and this Contrivance here seems the more convenient in respect of Walking; in which a moderate Flexion of one of the Legs is only Necessary, in Order to its Translation before the other.

E, The *Seminervosus* or *Semitendinosus*.

F, The *Glutæus Magnus* Rais'd.

G, Part of the *Glutæus Medius*.

H, The Back-part of the Thigh-bone made bare.

I, The *Vastus Externus* partly cover'd with the Tendinous Expansion of the *Membranosus*.

K, The Tendon of the *Membranosus* on the *Vastus*.

L, M, The Two Prominencies of the Lower *Appendix* of the Thigh-bone, of which the Internal (M) is furrow'd to receive the Round Tendon of the *Semimembranosus*.

N, The Trunks of the Blood-Vessels cut off in the Ham.

O, Part of the Crural Nerve.

P P, The Two Fleishy Beginnings of the *Gasterocnemius Externus*.







T H E

SEVENTY-EIGHTH TABLE.



PRESENTS the Muscles on the Back-part of the Thigh partly free'd from each other, and left at their Originations and Insertions.

A, Part of the *Glutæus Major*.

BB, *Biceps Femoris in Situ* : It having Two Beginnings; the Superior and Longest of which, Arises from the Protuberance of the *Os Ischium* (G), in its Descent becomes Large and Fleishy, and Lessening it self, joins with the Inferior and Shorter Head, which Springs partly Fleishy and partly Tendinous from the *Linea Aspera* of the *Os Femoris*, immediately below the Termination of the *Glutæus Magnus*; soon after these Two Heads or Beginnings of this Muscle are United, it becomes Tendinous as it Descends in a Channel on the External Part of the Lower *Appendix* of the *Os Femoris*, and is Implanted to the Superior *Epiphysis* of the *Fibula*.

Besides the Office commonly Assign'd, this Muscle together with the *Seminervosus* and *Semimembranosus*; it's likewise Imploy'd in Turning the Leg together with the Foot, &c. Outwards in Sitting with the Leg Bended.

CC, The *Semimembranosus* remov'd from its Proper Situation.

DD, The *Seminervosus* in like Manner Rais'd, and left at its Origination and Insertion: This Arises from the same Protuberance of the *Os Ischium* (G), with the Upper Beginning of the *Biceps* and Origin of the *Semimembranosus* (CC), and Descending Obliquely Inward after making a Fleishy Belly, Composes a Round Tendon above the Ham, which Descends to its Insertion with the *Gracilis* and *Sartorius*, below the Upper *Appendix* of the *Tibia* Internally.

E, The Posterior Part of the Thigh-Bone.

FF, Parts of the *Gasterocnemius Externus*.

G, The Protuberance of the *Os Ischium* where the Bending Muscles of the *Tibia* above-mention'd do Arise.

H, Part of the *Triceps*.

I, The Great Crural Nerve.



T H E
SEVENTY-NINTH TABLE.



EXPRESSES Parts of some Muscles remaining on the Fore-part of the Thigh-Bone.

A A, The Fore-part of the Thigh-Bone.

BB, Part of the *Cruveus* Muscle Rais'd from the *Os Femoris*.

b b, A Portion of the *Cruveus* still remaining on the Thigh-Bone.

C, The Internal Part of the *Patella*, or Knee-pan.

D, The Inside of the Tendon of all the Extending Muscles of the *Tibia* United above the *Patella*.

EE, The Mucilaginous Glandules of the Knee: The Situation of these Glandules as well as others of this Kind, is so Contriv'd in the several Articulations of Bones to which they belong, as that they are not liable to be Comprest by the Apposition of the Bones in their Various Motions: Nor are they Destitute of such a Compressure as is Necessary to Accelerate their Mucilaginous or Slimy Juice, when Lodg'd in their Excretory Tubes. The Tubes or Excretory Ducts of these Glands, do not Discharge their Contents like those of the *Fauces*, by open Apertures; but are Carri'd beyond the Surface of their Glands, and Frame a *Fimbria* or Fringe-like Appearance, which hangs Loose or Flaggy in the *Sinus's* of the Articulations: This Contrivance in these Excretory Tubes of the Mucilaginous Glands of the Joints, is not only Necessary to Defend their Mouths from being Opprest by the Mucilage contain'd in the *Sinus's* of the Articulations in its Endeavour to Return again; but the too Plentiful Excretion of this Mucilage is also prevented, and such a Quantity only Emitted as is Necessary to Lubricate the Articulations in their Respective Motions. Hence it Appears as in Violent Repeated Motions of the Bones, there is a greater Expence of the Mucilage, so there is a constant Supply in Proportion to that Expence.

F, The Head of the Thigh-Bone taken out of the *Acetabulum*, or Cavity of the Hip-Bone.

G, The *Ligamentum Latum*, or Broad Ligament of the *Coxendix*, which Involv'd the Articulation of the Thigh-Bone with the Hip, here cut from the Margin of the *Acetabulum*, and left at its Connection to the Neck of the Thigh-Bone.

H, Part of the Great *Trochanter*.

The Muscles Adjacent to these Parts last mention'd, are here so confusedly Express'd, as no Explanation of them can be Asserted.







T H E E I G H T I E T H T A B L E.



THE Muscles on the Fore-part of the Leg lying under the *Fascia Lata*.

A, The Upper-part of the *Tibia* next the *Patella* which Composes the Knee.

B, The Tendons of the *Musculi Peronei* in their Progress towards their Insertions, as is Express'd in the following Table.

C, The Lower Appendix of the *Fibula*, call'd *Malleolus Externus*.

D, The *Musculus Tibialis Anticus in Situ* : *Spigelius* calls it *Musculus Catenaë*, because when it is Divided, the Patient is Oblig'd to Use a Sling to Support the Foot for some time. I have more than once seen this Muscle Divided, whether by Ignorantly Mis-applying of Causticks on Nodes of the *Tibia*, or in the Case of a Fracture of that Bone, and the Patient after some Time has Recover'd the compleat Action of Lifting up his Foot, by the *Extensor Pollicis Pedis*, H : The *Tibialis Anticus* derives its Fleshy Origin from the Lower-part of the Superior Appendage of the *Tibia* between its Prominence, where the Great Tendon of all the Extending Muscles of the Leg is Inserted, and the Origination of the *Musculus Extensor Digitorum Pedis Longus seu Magnus* ; it also continues a Disgregated Fleshy Origination for near Two Thirds of the Superior Part of the *Tibia* Externally Laterally, next the *Fibula* ; which Composing a Fleshy Belly, Lessens its self in Half its Progress, and Growing into a Strong and somewhat Round Tendon, Descends Obliquely over the Inferior Part of the *Tibia*, and under the Annular Ligament, and is Inserted to the Superior and Internal Part of the *Os Metarsi Pollicis*.

This pulls the Foot Upwards and Forwards, Directly.

E, The *Peronæus Longus*.

F, The *Extensor Digitorum Pedis Longus*.

G, Part of the Tendons of the *Extensor Digitorum Brevis*.

H, The Tendon of the *Musculus Extensor Pollicis Longus*.

I, Part of the *Gasterocnemius Externus*.

N. B. That the Muscles are Express'd in this Figure under the *Fascia Lata* ; which like a Bandage retains their Tendons in their Proper Situation, in Order to Perform their Offices in Extending the Toes and drawing the Foot Upwards. In the following Figure the *Fascia Lata* is taken off, and the Muscles are Represented more Distinct, being partly Separated, and their Tendons Rais'd.

Part of the *Gasterocnemius Internus* is Express'd in this Figure between E, and I.



T H E EIGHTY-FIRST TABLE.



IVERS Muscles on the Fore-part of the Leg, partly Divided from each other.

A, The Superior *Apophysis* of the *Tibia*, to which the Tendons of the Extending Muscles (after joining with the *Patella*) are Inserted.

B, The Upper *Appendix* of the *Fibula*.

C, Part of the *Tibia*.

D, The Heel or *Os Calcis*.

E, The *Musculus Tibialis Anticus*.

F, The *Extensor Digitorum Magnus* or *Longus*, it being the Largest and Longest Muscle that Extends the Toes : This hath an Acute Fleishy Beginning Externally from the Inferior Part of the Upper *Appendix* of the *Tibia* next the *Fibula* ; as also a Long Fleishy one from the Superior Part of the last Nam'd Bone, and Lessening it self in Half its Progress on the Leg, it joins with a Second Broad, Disgregated Fleishy Beginning, continued for near Half the Inferior Part of the *Fibula* ; where Descending under the *Ligamentum Annulare* of the *Talus*, it is Divided into Five Tendons, Four of which are Inserted to the Third Bones of all the Lesser Toes ; but the Fifth is Implanted on the Superior Part of the *Os Metatarsi* of the Little Toe ; which Part of it, *Vesalius* makes his Ninth Muscle belonging to the Foot.

G, The *Extensor Digitorum Brevis* : It Ariseth Fleishy from the External and Fore-part of the *Os Calcis*, soon Dilating it self to a Fleishy Belly, which being Divided into Four Fleishy Portions, become so many Tendons, passing over the Upper-part of the Foot, make Acute Angles with the Tendons of the Former Muscle, as they run over the First Internode of each Lesser Toe, to their Insertions at the Superior Part of their Second Internodes.

H, The *Extensor Pollicis Pedis Longus & Magnus* : It being the Longest and Largest Extender of the Great Toe : Its Beginning is Large and Fleishy on the Fore-part of the *Fibula*, from immediately below its Superior *Appendix*, to Four Finger's Breadth above its Inferior one ; and Descending under the *Ligamentum Annulare* of the *Tarsus*, between the Tendon of the *Tibialis Anticus*, and the Tendons of the *Extensor Pedis Longus*, Marching along the Superior Part of the Foot ; it's Inserted to the Upper-part of the Second Bone of the Great Toe ; its Name declares its Use.

I, The *Peroneus Primus seu Magnus in Situ* : In the following Table it's Rais'd from its Origin, and left at its Insertion.

K, The Skin on the Bottom of the Foot, call'd *Planta Pedis*, taken off.

LL, A Style or Bodkin Supporting the Tendons of the *Extensor Digitorum Longus*.

M, The Lower *Appendix* of the *Fibula*, call'd *Malleolus Externus*.

N, Part of the Bone, call'd *Talus* and *Astragalus* made bare, so that its Cartilaginous Surface that is Articulated with the Inferior Part of the *Tibia* and *Fibula*, may be seen.

O, The Mucilaginous Gland of the *Tarsus* Entertain'd in the Large Cavity or *Interstitium*, Fram'd between the *Talus* and Oblong Tubercle of the *Os Calcis* ; the Use of which Cavity and *Mucus*, is taken Notice of by *Realdus Columbus* Lib. I. Cap. xxxii. to Moistn the Articulation of the Bones, least they become Dry by their frequent Motion.

P, The Tendon of the *Peroneus Longus* Marching behind the *Malleolus Externus*, in its Way to its Insertion in the Bottom of the Foot.

Q, Part of the Tendon of the *Peroneus Secundus*.

R, The *Extensor Pollicis Brevis in Situ*.

S, Part of the *Gastrocnemius Externus*.

T, Part of the *Internus*.

N. B. That the *Fascia Membranosa* which Helps to Compose the *Annular Ligament*, between the Two *Malleoli* and Upper-part of the Foot or *Tarsus*, commonly call'd the *Instep*, is here taken off from its Continuance near Half the Lower-part of the *Tibia*, that of the Upper-part of the Leg or *Tibia* remaining on, as is well Express'd in this Figure.







T H E EIGHTY-SECOND TABLE.



HEWS the Extending Muscles of the Toes, together with divers Employ'd in the Motion of the Foot Dissected from their Originals, and left at their Tendinous Insertions.

A, The Inside of the *Tibialis Anticus* free'd from the *Tibia*.

B, The *Peroneus Secundus*, by some call'd *Semifibuleus*: It has an Acute Fleshy Beginning from above the Middle of the External Part of the *Fibula*, under the Fleshy Belly of the *Peroneus Longus*, continuing to derive a Disgregated Fleshy Beginning from the Posterior Sharp Edge of the *Fibula*, Composing a Fleshy Belly; it Grows Tendinous as it passes behind the *Malleolus Externus*, under the Tendon of the *Peroneus Longus*, and is In-

serted to the Superior and External Part of the *Os Metatarsi* of the Little Toe.

This draws the Foot Outwards.

C, The *Peroneus Primus* or *Longus*, so call'd because it is the First that offers its self to View, and the Longest Muscle plac'd on the *Os Perone* or *Fibula*; it Arises Externally Tendinous, and Internally Fleshy, from above Half the Superior Part of the *Fibula*, Descending somewhat Backwards, Composes a Strong Flat Tendon, which becomes somewhat Round as it Marches in a Channel on the *Malleolus Externus*; whence it's Inflected Forwards (*Tab. 81. P.*) Accompanying the Tendon of the *Peroneus Secundus* to its Insertion (*Tab. Ibid. Q.*); where the Tendon of this Muscle leaves it, and proceeds to March over the *Os Cuboides* or *Spongiosum*, and under the *Abductor Minimi Digiti*; whence it passes in *Planta Pedis*, between the *Ossa Cuneiformia* and Tendons of the Muscles Bending the Toes, to its Implantation at the Superior and Hindmost Part of the *Os Metatarsi* of the Great Toe, as is Express'd, *Tab. 86. Fig. 1. M, Ibid. Fig. 2. F.*

This Contrivance in Nature in conveying the Tendon of this Muscle, not only over the Lower *Appendix* of the *Fibula*, but on the *Os Spongiosum* (as a Rope on a Double Pulley) is very considerable in respect to its Office; for since the Ball of the Great Toe (to which Part this Tendon is Inserted) is Necessary for the Center of Gravity to the Whole Body; it is an Instance of the Skill of the Divine Architect so to Dispose of this Instrument, which brings that Center towards a Perpendicular Bearing (which Necessarily Projects from the Fulcrum or *Tibia*), by adding this Double Pulley; which Composing Angles of Contortion do's Reciprocally Augment the Force of making the Ball of the Great Toe Approach towards a right Bearing with the *Tibia*; and by this means sustains the Weight of the Body, tho' it is not in a Direct Position with the Gravity of the Whole.

D, The *Extensor Digitorum Pedis Longus*.

EEE, &c. Its Five Tendons Inserted to the Extream Internode of the Lesser Toes; Two of which go to the Little Toe, as here Express'd.

e, One of the Tendons of the *Extensor Digitorum Magnus*, Implanted on the *Os Metatarsi* of the Little Toe.

F, The *Extensor Digitorum Pedis Brevis*.

fff, Its Tendons.

G, The *Extensor Pollicis Longus*,

H, The *Extensor Pollicis Brevis*.

I, The *Tibia*.

K, The *Fibula*.

LLL, The Bones of the *Tarsus* Connected to each other, and the *Ossa Metatarsi*, by Ligaments.

M, The Great Ligament of the Articulation of the *Tarsus*, with the *Tibia* and *Fibula* Divided, to shew the Upper Cartilaginous Surface of the *Os Tali* or *Astragalus*.

NN, &c. The *Musculi Inter-Ossei* lying between the Bones of the *Metatarsus*.

O, The *Abductor Minimi Digiti*.

P, Part of the *Flexor Pollicis Longus* remaining *in Situ* on the Back-part of the *Fibula*.

Q, Part of the *Gastrocnemius Internus*.

R, The Trunks of the Nerves and Blood-Vessels which are Intervient to the Muscles on the Fore-part of the *Tibia*.

S, The Ligament between the *Tibia* and *Fibula* which Distinguishes the Muscles of the Fore-part from those behind.



T H E

EIGHTY-THIRD TABLE.



REPRESENTS divers External Muscles of the Leg and Bottom of the Foot.

A, The Upper *Appendix* of the *Tibia*, which Helps to Compose the Internal Lateral Part of the Knee.

B, The Body of the *Tibia*.

C, The *Os Calcis*.

D, Part of the *Musculus Popliteus* Inserted to the Upper and Internal Part of the *Tibia*.

E, The *Gasterocnemius Externus*, so call'd, because it's the External Muscle which Helps to Compose the Calf of the Leg: *Veslingius* Distinguishes this here Express, with its Companion on the Outside of the Calf, by the Name of *Gasterocnemius*, and the Subjacent Muscle, he calls *Soleus*, from its Figure being like that of the Sole-Fish, which Others, as *Spigelius*, &c. call *Gasterocnemius Internus*. This External Muscle is also call'd *Gemellus*, it being as it were Double; it having Two Distinct Fleishy Originations, from the Superior and Hindmost Parts of each Tubercle of the Lower Appendage of the Thigh-bone; which in their Descent are each Dilated into Two Large Fleishy Bellies: The Innermost of which is Thickest, and Largest; each of these Fleishy Bellies having a Differing Series of Fibres, join to each other, near where they make a Broad Strong Tendon, which Narrowing it self, joins with the Great Tendon of the *Gasterocnemius Internus*, Four Finger's Breadth above its Insertion to the *Os Calcis*.

Riolan Asserts with *Vesalius*, That in the Two Beginnings of this Muscle, there are Two *Osicula Seseamoidea*; which we must Acknowledge with *Marchette*, have hitherto Escap'd our Observation, tho' it's likely it may be so in Aged Bodies; as Appear'd in a Subject I lately Dissected, on one Side only.

When this Muscle Acts, the Foot is said to be Extended or pull'd Backwards, which Motion of it is very Necessary in Walking, Running, Leaping, and Standing on Tiptoe, &c. Hence it is those that Walk much, have these Muscles Larger than others, thro' the frequent Use of them, and amongst whom those that carry heavy Burthens, and especially *Sedans* or *Chairs* in this Town; and those who wear Low-heel'd Shoes have these Muscles Remarkably Larger than others.

F, The Tendinous Expansion of the *Musculus Plantaris* free'd from the Bottom of the Foot.

G, The *Perforatus*, so call'd, because its Tendons are Perforated like those of the Fingers. It

is also call'd *Flexor Secundi Internodii Digitorum Pedis*, from its Use, and *Sublinis* from its Situation: It Springeth from the Inferior and Internal Part of the *Os Calcis*, between the *Musculi Abductores* of the Greater and Lesser Toes, Dilating it self to a Fleishy Belly; after it hath pass'd the Middle of the *Planta Pedis*; it is Divided into Four Fleishy Portions, which become so many Tendons, and are Divided near their Terminations to Admit the Tendons of the following Muscles or *Perforatus*, to pass thro' them to their Insertions; these Tendons being United again, pass Underneath the *Perforantes* to their Implantations at the Upper-part of the Second Bone of each Lesser Toe.

HH, The Tendons of the *Perforans* passing thro' the Divisions of those of the *Perforatus* last Describ'd.

I, The Tendon of the *Flexor Pollicis Longus*.

K, The *Abductor Pollicis*, so call'd from its Office: It Arises partly Tendinous and partly Fleishy from the Internal and Lateral Part of the *Os Calcis*, and in Half its Progress Composes a Tendon which joins with another Beginning, Springing from the *Os Cuneiforme Majus*, and *Naviculare*; both Marching Forwards make one Tendon at its Insertion to the External Part of the *Os Seseamoidea* of the Great Toe Laterally: It draws the Great Toe from the rest.

L, The *Abductor Minimi Digiti*; this Muscle is Outwardly Tendinous and Inwardly Fleishy in its Origin at the External Part of the *Os Calcis*, and becoming Tendinous in Half its Progress on the Outside of the Foot; it joins a Second Fleishy beginning of this Muscle, Springing from the Superior and External Part of the *Os Metatarsi* of the Little Toe, makes one Tendon at its Insertion to the Upper-part of the First Bone of the Little Toe Externally Laterally.

M, The Internal *Malleolus*.

N, The Tendon of the *Tibialis Anticus*.

O, The Tendon of the *Gasterocnemii*.

P, Part of the Small Long Tendon of the *Musculus Plantaris*, in its Descent towards the Bottom of the Foot.

Q, Part of the *Gasterocnemius Internus* or *Soleus*.

Note, That Part of the *Flexor Digitorum Pedis Perforans* and *Flexor Pollicis*, may be seen in this Position of the Part between M and Q; but the Membranes not being taken off (in the Subject whence this Figure was taken) those Muscles are here Express'd very Obscurely.





EIGHTY-FOURTH TABLE.



REPRESENTS the Muscles of the Hinder-part of the Leg, after the *Gasterocnemii* are Dissected from their Originals, and left at their Insertions.

A A, The Two Inferior Heads of the Thigh-bone.

B, Part of One of the Semilunary Cartilages plac'd in the Articulation of the Thigh-bone with the *Tibia*; this Cartilage together with that on the other Side of this Articulation, Frame Two Shallow Cavities on the *Tibia*, which receive the Prominencies of the Two Inferior Heads of the Thigh-bone: These Semilunary Cartilages are Thick and Large, Externally towards the Surface of the *Tibia*, to which they are Connected and Gradually become Thinner as they Approach the Center of the Upper-part of the *Tibia*; their Figure very aptly Represents a Half-Moon; their Office is very considerable in preventing those frequent Luxations and Dislocations which this Part, on very slight Occasions, would otherwise be Incident to; for which End these Semilunary Cartilages are Connected to the Broad Ligament which Invests this Articulation; which Ligament is very well Express'd in this Figure, it being partly taken off from the Hinder-part of the Articulation, to shew the Two Heads of the Thigh-bone.

C, The *Musculus Popliteus*, by some call'd *Subpopliteus*: It Ariseth with a Short Strong Tendon from the External Head of the Inferior *Appendix* of the *Os Femoris*, whence Descending Obliquely over the Juncture, it becomes Fleishy or more and more Expanding it self, till it's Implanted to the Superior Part of the *Tibia* Internally, immediately below its Upper *Appendix* (a): This Muscle not only Assists the rest Employ'd in Bending the *Tibia*, but it is Advantageously Situated to Antagonize the *Biceps Femoris*, when the Leg or Knee is Bended in Turning the Foot and Toes Inwards.

D, The Internal Part of the *Tibia*.

E E, Parts of the *Gasterocnemius Externus* Dissected from their Originations.

F, The Inferior or Internal Surface of the *Gasterocnemius Internus*; where a very Elegant Disposition of its Fibres are Curiously Express'd, which Appearance I have frequently Observ'd; but in some Subjects, and particularly in One I lately Dissected, a quite different *Series* of Fibres of this Muscle Offer'd: This Muscle lies under the *Gasterocnemius Externus* and Part of the *Plantaris*; it's call'd *Soleus* from its Figure; its External Fleishy Part is Cover'd with a Transparent Tendinous Expansion, which makes it Appear of a Livid Colour; it Arises partly Tendinous, but chiefly Fleishy from the Hindmost Part of the Upper *Appendix* of the *Fibula*, and Back-part of the *Tibia*, immediately below the Termination of the *Sub-*

popliteus, and Increasing to a Large Fleishy Belly Compos'd of Various Orders of Fibres, all which being United into a Tendon, join with the Tendon of the External Muscle, and are Inserted to the Superior and Hindmost Part of the *Os Calcis*. The *Talus* together with the Toes being as it were a Leaver to the Whole Body, ought therefore to be Attended with Muscles of great Strength to Extend them; wherefore we find those Muscles so much to Exceed their Antagonist the *Tibialis Anticus*, as well in the Advantageous Construction of their Differing *Series* of Fleishy Fibres, as their Magnitude and Insertion at the Extremity of the *Os Calcis*; by which means they are not only rendred Serviceable in Walking, Running, and the like; but do also Support the *Tibiae* in Standing, least the Weight of the Body should make them Incline Forwards at their Articulations with the Bones of the Feet.

GG, The *Plantaris* left at its Origination; or which I rather believe, after Dissection from thence, and Rais'd, is there again Fastn'd; its Proper Situation being between the *Gasterocnemius Externus* and *Internus*; the Latter of which Muscles could not without Difficulty be taken from its Origination, as is Represented in this Table, and the *Plantaris* left: This Muscle is so call'd because its Tendon is Expanded in the *Planta Pedis*, like that of the *Palmaris* in the Palm of the Hand: It Arises Fleishy from the Superior and Back-part of the External Head of the Thigh-bone, immediately under the Outmost Beginning of the *Gasterocnemius Externus*; whence Descending Obliquely between the Two *Gasterocnemii*, Composes a Thin, Long, Flat Tendon, which passes Out from between the Fleishy Bellies of the last nam'd Muscles, and Descends Internally Laterally by their Great Tendons (as is Express'd in the preceding Table P,) and Marches over the *Os Calcis*, Expanding it self on the Sole of the Foot; where it almost Inseparably Adheres to the Fleishy Body of the *Musculus Flexor Digitorum Perforatus*, and is Inserted on both Sides the First Internodes of each Lesser Toe, and sometimes to that of the Great Toe.

The Office of this Muscle is very Obscure; its Tendinous Expansion on the Bottom of the Foot, is chiefly Serviceable in Defending the Subjacent Muscles, Tendons, Nerves, and Blood-Vessels, from being Compress'd in Standing, Walking, &c.

N. B. In some Bodies the Fleishy Beginning and Long Tendon of this Muscle is wanting.

g, The Tendinous Expansion of the *Plantaris* separated from the Bottom of the Foot.

H, A Large Nerve in its way to the Bottom of the Foot and Toes.

I, The Beginning of the *Flexor Pollicis in Situ*.

K K, Part of the *Peroneus Secundus*.

L, The Beginning of the *Perforans in Situ*.

M, The *Abductor Pollicis*.

N, The Skin and Fat taken off the Heel and Bottom of the Foot.

T H E
EIGHTY-FIFTH TABLE.



LL the Muscles Represented in the Preceding Table Rais'd from their Originals, and left at their Insertions.

A, The Inferior Part of the *Musculus Popliteus* at its Insertion to the Internal and Upper Part of the *Tibia*.

a, The Internal Part of the Knee.

B, The Great Bone of the Leg call'd *Tibia*;

C, The Lesser Bone call'd *Fibula*.

DD, The Two Beginnings of the *Gastrocnemius Externus*;
E, its Conjunction with the Internal *Gastrocnem* Muscle.

FF, The *Musculus Plantaris* plac'd between the External and Internal *Gastrocnem* Muscles

G, The *Tibialis Posticus*, so call'd from its Situation on the Back-part of the *Tibia*; it's also call'd *Nauticus*, from the Use which Mariners make of it in Climbing up their Masts; it's plac'd under the *Flexor Pollicis Longus* and Part of the *Perforans Digitorum Pedis*; in some Subjects it seems to have Two Fleshy Bellies: This Muscle remains undivided between the Bones after the Circular Incision for Amputations of the Leg below the Knee: It Springs from a partly Tendinous and Fleshy Origination at the Superior and Back-part of the *Fibula*, as also from the Ligament between the *Tibia* and *Fibula*; whence Descending, becomes Tendinous as it runs in a *Sinus* on the Back-part of the Lower Appendage of the *Tibia* call'd *Malleolus Internus*, under an Inclosing Ligament, and is Inserted to the *Os Naviculare*: This Draws the Foot Upwards and Inwards.

H, The *Perforans* or *Flexor Tertii Internodii Digitorum Pedis*; It hath an Acute Fleshy Origination from the Back-part of the *Tibia*, immediately under the *Subpopliteus*, having a Double Order of Fleshy Fibres United to a Middle Tendon like the *Flexor Pollicis Longus*, but ceases to be Fleshy as it Marches behind the *Malleolus Internus*, Running in a Channel over the Internal Part of the *Os Calcis*, and under its Inclosing Ligaments; in Half its Progress through the Bottom of the Foot, its Tendon is Divided into Four, which March through the Fissures of the Tendons of the *Perforatus I*, and are Inserted to the Third Bones of the Lesser Toes.

I, The *Perforatus in Situ*, Describ'd Tab. 83.

K, The *Flexor Pollicis Pedis Longus* is an Antagonist to the *Extensor Longus*; It Arises opposite to it from the Back-part of the *Fibula*, with a Double Order of Fleshy Fibres passing to a Middle Tendon; it ceases to be Fleshy as it passes over the Juncture of the *Talus*, running through a Channel on the Internal Part of the *Os Calcis*, its Tendon still Marches under the Tendon of the *Musculus Flexor Digitorum Longus Perforans*, to which it most commonly joins, and passes in a Depressure made in the *Flexor Pollicis Brevis* (Elegantly Express'd in this Figure) to its Insertion at the last Bone of the Great Toe: Its Name Declares its Office. There are many remarkable Parts Express'd in this Figure, which have been already Explain'd in the preceding Tables, as the *Os Calcis* made bare, the *Malleolus Internus*, the *Musculus Abductor Minimi Digiti*, &c. Wherefore we shall not Insert particular Characters of them here, as we have done in the foregoing Tables.





Fig. 1.

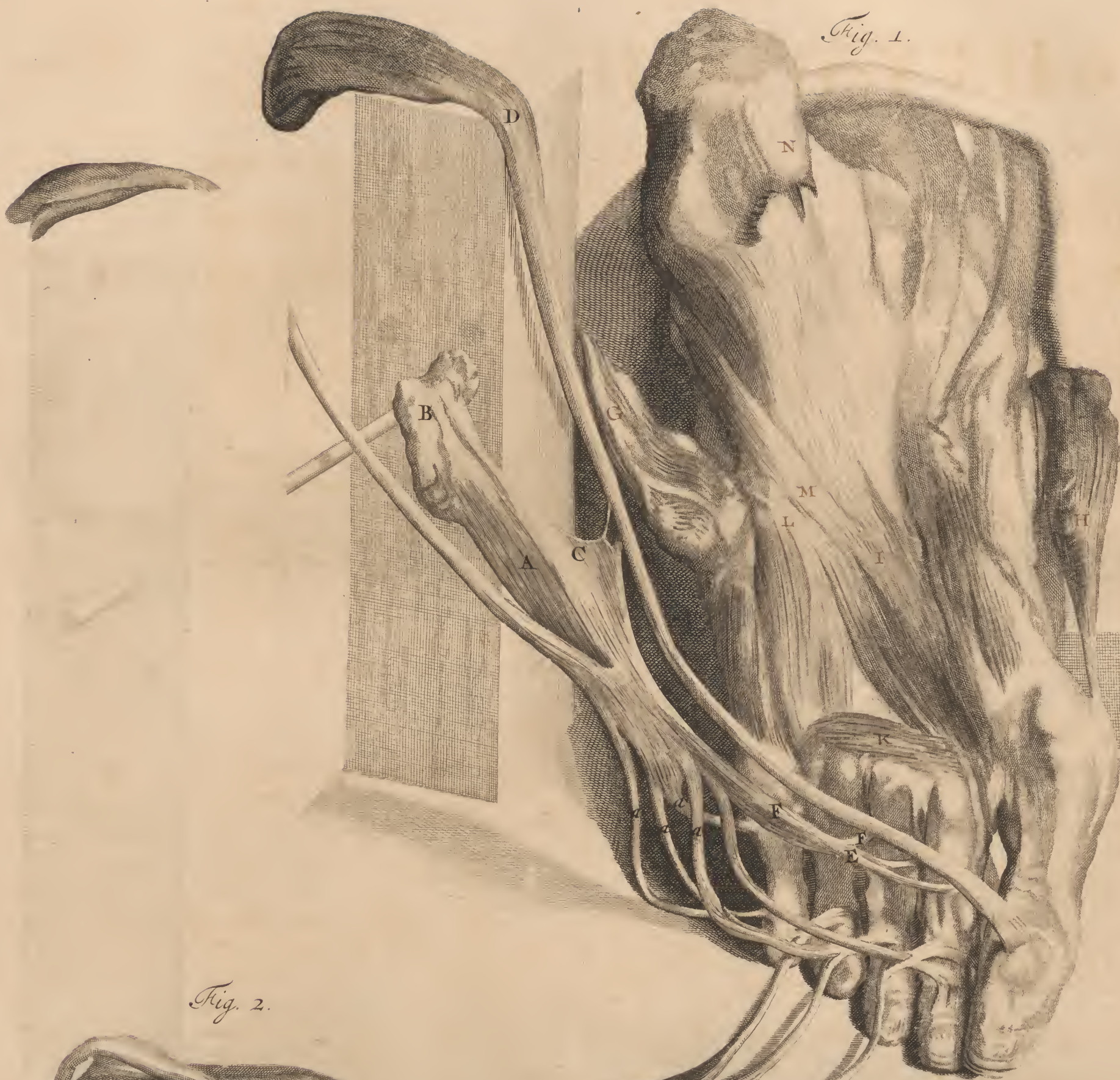


Fig. 2.



Fig. 3.



THE EIGHTY-SIXTH TABLE.

Fig. 1.



EXHIBITS all the Muscles which Appear in the Bottom of the Foot, after the Expansion of the *Plantaris* is remov'd.

ABC, The *Musculus Lumbricalis*, by some call'd *Carnea Massa in Planta Pedis*; It Springs Flethy from the Internal Part of the *Os Calcis*, and Growing Tendinous, joins with the Tendons of the *Perforatus*; where Growing Flethy again, Divides its self, and Composes the Four *Musculi Lumbricales* FFE, (properly so call'd from their Figure); all which become Tendinous at their Insertions to the Internal Parts of each Lesser Toe, Laterally next the Great Toe: It is also call'd *Flexor Primi Internodii Digitorum Pedis*, from its Use.

aaa, The Tendons of the *Perforans* Running thro' the Fissures of the *Musculus Perforatus*; which is here Dissected from its Original, and left at its Insertions to the Lesser Toes, that of the Little Toe being wanting.

D, Part of the *Flexor Pollicis Longus*.

G, The *Abductor Minimi Digiti Pedis* cut from its First Original at the *Os Calcis*, and left at its Second, at the *Metatarsi Minimi Digiti*.

H, Part of the *Abductor Pollicis*.

I, The *Flexor Pollicis Pedis Brevis* in its Proper Situation.

K, The *Transversalis Pedis* in like Manner in Situ.

L, Parts of the *Inter-Offei*.

M, Part of the Tendon of the *Peroneus Longus*, in its Way to its Insertion in the Bottom of the Foot.

N, The Heel-bone.

Fig. 2.

A, Between CC, and D, The *Flexor Pollicis Brevis*: This, as Appears in the preceding Table, seems to be Divided into Two Parts, by the Tendon of the Long Muscle Bending the Great Toe passing over it: It Ariseth from the *Os Cuneiforme Medium*, and Marching over the Termination of the *Peroneus Longus*, is Implanted to the *Offa Sesamoidea* of the Great Toe, which Bones are (like the *Patella*) afterwards Tied to the Second Internode of that Toe: Its Name declares its Office.

B, The *Abductor Minimi Digiti* cut from its Origin and Pinn'd up.

AAAA, The *Musculi Inter-Offei in Situ*, somewhat Rais'd.

CCC, Part of the *Abductor Pollicis*, and *Flexor Brevis*.

D, The *Adductor Pollicis*: This Arises partly Tendinous and partly Flethy from the Inferior Part of the *Os Cuneiforme Tertium*, after Composing a Flethy Belly, is Lessen'd at its Insertion to the Part of the Outermost *Os Sesamoides* of the Great Toe: Its Denomination Expresses its Use.

E, The *Transversalis Pedis*, so call'd from its Situation: It Ariseth Tendinous from the External *Os Sesamoides* of the Great Toe, and becoming a Flethy Belly in its Progress over the First Internodes of the Two next Toes, it is Lessen'd at its Insertion to the Inferior Part of the *Os Metatarsi* of the Little Toe: Its Office is to bring the Lesser Toe towards the Greater.

F, The Tendon of the *Peroneus Longus* at its Termination.

G, The *Os Calcis*.

N.B. Parts of the Tendons of the *Perforatus* and *Perforans*, are Express'd at their Terminations on the Bones of the Toes.

Fig. 3.

AA, &c. The Eight *Musculi Inter-Offei* of the Toes, according to *Bidloo* and Others; the First of which lying on the Little Toe, we choose to call from its Office, *Flexor Primi Internodii Minimi Digiti*, it not lying between the Metatarsal Bones like the rest: Its Rise being from the Superior Part of the *Os Metatarsi Minimi Digiti*, it passes Directly to its Insertion in the First Bone of the Lesser Toe. The *Inter-Offei* are in Number Seven, they derive their Names from their Situation, and may each deserve a Proper Appellation from their Use: The First next to the Muscle last Describ'd, may be call'd *Adductor Minimi Digiti*; the Second is the Largest, and draws the next Toe towards the Lesser, and may be call'd *Abductor Auricularis*; the Third Antagonizes the Former, and is an *Adductor* of that Toe; the Fourth is an *Abductor Medii Digiti*; the Fifth is an *Adductor* of the same; the Sixth is an *Adductor*; and the Seventh an *Abductor Indicis Pedis*: Their Origination, Progress, and Insertion, may be seen Express'd in this Figure.

BB, CC, Divers Muscles of the Great Toe which are confusedly Dispos'd.

D, The *Abductor Minimi Digiti*.

E, The Tendon of the *Peroneus Longus*, at its Implantation to the *Os Metatarsi* of the Great Toe.

T H E EIGHTY-SEVENTH TABLE.



HAVING Examined the Muscles of the Limbs and most of those of the Head, Trunk and other Parts of the Body, and taken Notice of many of the most Remarkable Ligaments in divers Articulations of the Bones : We come next to View the Whole Compages of the Bones when Dried, call'd the *Skeleton*; the Fore-part of which is Represented in this Table. If you Examine the Proper Situation of each Bone, you will find none of them plac'd in a Perpendicular Bearing to each other : Above Two Thirds of the Whole Head, Projects from its Articulation with the *Vertebrae* of the Neck : The Whole Ribs and *Sternum* which Compose the Fore-part of the *Thorax*, together with all its *Viscera*, as well as the *Viscera* of the Lower Belly, Project from the *Vertebrae* of the Back and Loins : The *Claviculae* whose Positions are Horizontal, Support the Arms, by their Connections with the *Scapulae* : The Articulations of the Thigh-bones are not Perpendicular to the Grand Fulcrum of the Head and Trunk ; (*i. e.* the Whole *Vertebrae*;) but are plac'd before it. The Thigh-bones Stand Obliquely Inwards, and so do the *Tibiae*, tho' not in so great a Manner. We Stand either on the Extremity of the *Os Calcis*, and Ball of the Great Toe together ; or else on the Ball of the Great Toe only, as on Tip-Toe.

A, The Forehead-bone Divided into Two Parts, by means of a Continuation of the Longitudinal Suture, which may be seen in divers Subjects as here Exprest ; nor do's such an Appearance Determine the Sex as some pretend.

B, The *Bregma*.

C, The Temple-bone call'd *Squamosum*.

D, The Yoke-bone or *Os Jugale* Compos'd of Two Process's ; the one deriv'd Backwards from the *Os Squamosum* ; the other Forwards from the First Bone of the Upper Jaw.

E, The Fourth Bone of the Upper Jaw.

F, The Lower Jaw-bone.

G, The Teeth call'd *Incisores*.

H, The First Rib near its Articulation with the *Vertebrae* of the Neck.

I, The *Clavicula* on the Right Side.

K, The *Processus Coracoideus Scapulae* on the Left Side.

L, The *Sternum* or Breast-bone.

MM, &c. The Seven True Ribs.

NN, &c. The Five Bastard Ribs, call'd *Nothae* or *Spuriae*.

OO, &c. Divers of the Twelve *Vertebrae* of the Back.

PP, &c. Four of the Five *Vertebrae* of the Loins ; the Uppermost being hid by the Cartilages of the Bastard Ribs.

Q, The *Os Ilium*.

R, Its Conjunction with the *Os Pubis* in the *Acetabulum*.

S, The *Os Pubis*.

T, The *Os Sacrum*.

V, The Upper-part of the *Offa Pubis*, behind which, is the *Os Coccygis*, not to be seen in this Position.

W, The *Os Humeri* or Shoulder-bone.

X, The *Ulna*, Exprest in its Whole Length in the Left Arm.

Y, The *Radius* ; between which and Z, are contain'd the Eight Bones of the *Carpus*.

Z, The Bones of the Hand, particularly those of the *Metacarpus*.

1, The Thigh-bone.

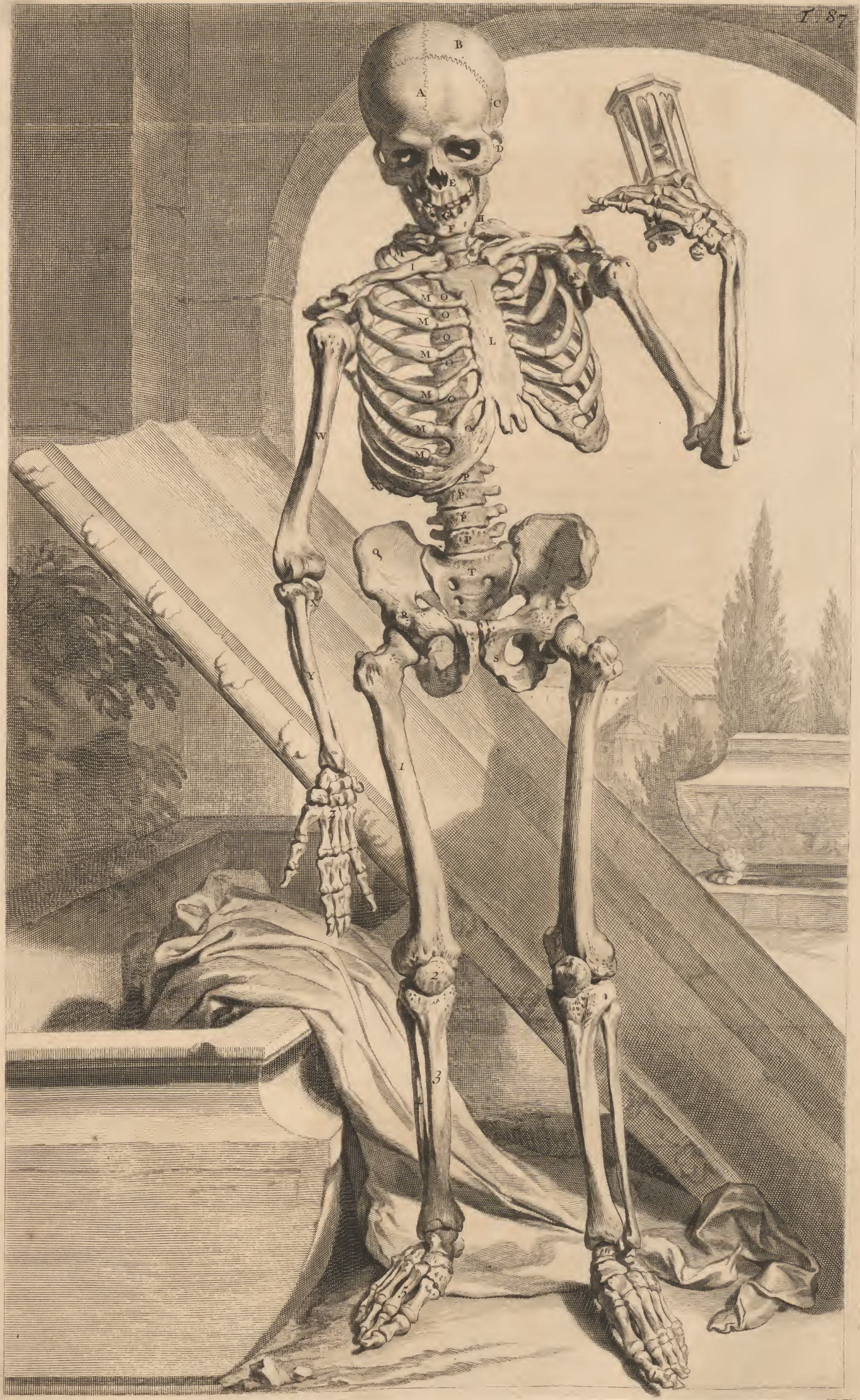
2, The *Patella* or Knee-pan.

3, The *Tibia*.

4, The *Fibula*.

5, The Bones of the Foot.









T H E

EIGHTY-EIGHTH TABLE.



IS the Back and Side of a Humane *Skeleton*.

What has been said in the preceding Page relating to the Position of the Bones, with respect to their Bearing on each other, seems better Explain'd in the Figure of this Table: Whereby it Appears, if the Muscles which draw the Head Up, or Backwards, as well as those plac'd on the Back-part of the Whole Spine, were not very Large as well as Numerous, the Trunk of the Body as well as the Head, would be continually subject to fall Forwards. Nor could we Stand, much less Translate the Body from one Place to another, if the Extending Muscles of the Thigh-bones, those of the *Tibiae* and Feet, were not very Strong, as is elsewhere taken Notice of in the Description of those Muscles. Hence we may easily Conceive, why we can with less Difficulty continue a Progressive Motion for a longer Time, than in a Standing Posture; the Former being an Alternate Acting of most of the Muscles; the Latter a Continued or Tonic Action of some few Muscles only. Hence also we may be Inform'd, why the greatest Part of the Gravity of the Whole Body is sustain'd by one Leg only in Standing, rather than with both at once: And divers other *Phænomena* of which my Time at present will not give leave so much as to make mention.

A, The Forehead-bone.

B, The *Bregma*.

C, The Temple-bone.

D, The Yoke-bone.

E, The Bone of the *Occiput*; near E is the Mammiform Process.

F, The Bones of the Upper-Jaw.

G, The Lower Jaw-bone.

H, The Fourth Bone of the Upper-Jaw which Constitutes the greatest Part of the Roof of the Mouth.

IIIIII, Five of the Spines of the *Vertebrae* of the Neck; the Uppermost Arising from the Second *Vertebra*, being Short and Double, do's not Appear in this Posture.

II *Inferior*, The Spines of the Two First *Vertebrae* of the Back or *Thorax*.

KK, &c. The rest of the Spines of the *Vertebrae* of the Back,

LL, Those of the Loins.

M, The First Rib.

N, The *Scapula* or Shoulder-blade.

n, Part of the *Clavicula* Articulated to the Spine of the *Scapula*.

O, The Internal Part of the *Sternum* or *Os Pectoris*.

PP, &c. The True Ribs.

QQ, Some of the Inferior or Bastard Ribs.

R, The *Os Ilium*,

S, The *Sacrum*,

T, The *Ischium*,

V, The *Coccygis*.

W, The Internal Part of the *Os Pubis*.

X, The *Os Humeri* or Shoulder-bone.

Y, The *Ulna*.

Z, The *Radius*.

1, The Bones of the Hand.

2, The Thigh-bone.

3, The *Patella*.

4, The *Tibia*.

5, The *Fibula*.

6, The Bones of the Foot.

A Particular Description of each of these Bones, may be seen in the Explanations of the following Tables.

THE EIGHTY-NINTH TABLE.



H I S and the Three following Tables Represent the Bones of the Skull, and those of the Upper and Under Jaws.
The Bones which Compose the Skull are the *Ossa Frontis, Sincipitis, Occipitis, Temporum, Sphenoides* and *Cribriforme*: Of these the Four First are esteem'd Proper to the Skull; the Two Latter are said to be Common to the Skull and Upper Jaw. The Bones of the Upper and Under Jaws will be more particularly Treated of in *Tab. 92.*

Fig. 1.

The Convex Fore-parts of the Forehead-bone, with those of the Upper-Jaw and *Os Sphenoides*, as they Appear Separated from the rest of the Bones of the Skull.

A, The Forehead-bone whose Superior Margin, Sutured with the *Ossa Sincipitis*, Composes near Two Thirds of a Circle.

BBB, Parts of the Superior *Lamellæ* or Table which sticks out with Sharp Edges and Points, which are receiv'd in the *Interstitia* of the like Fram'd by the *Ossa Sincipitis*, which Conjunction is call'd *Sutura*.

CC, The Lower-part of the Frontal-bone, Composing the Superior Part of the Orbit of the Eye.

D, A Process of the *Os Frontis* near the Great *Canthus* of the Eye.

E, Another Process of the same Bone towards the Lesser *Canthus*.

F, Part of the *Os Cuneiforme* join'd to the Frontal-bone, by *Bidloo* call'd Two Eminencies of the last nam'd Bone, on both Sides towards the Temples.

G, In this as well as the rest of the Bones of the Skull, may be seen divers *Foraminula* for the coming in and going out of Blood-Vessels, whether belonging to the *Dura Mater* and Common Integuments of the Skull, or *Duploi* of the Skull it self.

H, That Part of the *Os Frontis*, where a Cavity is Fram'd containing a Pituitous Membrane, which is continuous with that of the *Foramina Narium*, and Helps to Separate Part of the *Mucus* that is Excreted at the Nose. This Cavity is often Divided with a *Septum Osseum*; as Appears in *Tab. 91. Fig. 2.* In some Humane Skulls this Cavity scarce Appears, in others it is very Large, especially in those who have Projecting Eye-brows. Those that take much Snuff may have Part of it, get up into this Cavity, and there Lodge, and prove Pernicious. In Quadrupedes these Cavities are Large and Divided by divers Bony Partitions, and Communicate with each other by Various Apertures: In Sheep I have frequently found in those Cavities divers Large Maggots, not unlike the Great *Eruca Terrestris*. In Cows, Bulls, &c. these Cavities are very Large; in these Animals the Pituitary Membrane which Invests these Cavities, frequently becomes Inflam'd and Thickned; whereby the *Pituita* is Pent up in these Cavities, and causes a Disease in those Animals, call'd the *Stagers*; for which the Country People (particularly in *Stiffex*) perform this following Operation, and the Animal is presently reliev'd.

The Head of the Bealt being held in a convenient Posture, and the Operator Furnish'd with a Mallet and Large Broad Chisel: With One or Two Stroaks he drives his Chisel into the *Os Frontis*, which Composes this Cavity; this done, he raises up the Bone with its Superjacent Parts, by means of the Chisel; then with his Fingers he Separates the Pituitary Membrane from the Bone, and draws it out: This done, he presently Depresses the Rais'd up Parts with his Hand; and the Divided Bone afterwards Unites, and the Animal is seldom Troubled with the like Disease afterwards.

This Membrane fill'd with *Pituita* (they tell you) is a Water-bag lying on the Brain.

The rest of the Bones Express'd in this Figure are Explain'd *Tab. 92. Fig. 1.*

Fig. 2.

The Internal Concave Parts of the same Bone Represented in the preceding Figure.

A, That Part of the *Os Frontis* which receives the Fore-part of the Brain.

BB, The Saw-like Appearance of the *Os Frontis* after Disjunction from the Bones of the *Sinciput*, at the Coronal Suture.

CC, The Superior and Fore-part of the *Os Cuneiforme*, join'd to the Frontal-bone.

DD, The Internal and Anterior Process's of the *Os Cuneiforme*, which Help to Compose the *Sella Equina*, or *Turcica*; in this Sell the Pituitary Gland is Lodg'd; the Contorted Trunks of the Carotid Arteries pals by it on each Side in their Way to the Brain, where they fend out divers Small Branches which Help to Compose the *Rete Mirabile*: This Process gives way to the Optick Nerves in their Progress to the Eyes.

FF *Inferior*, Two Internal Long Processes of the *Os Sphenoides* join'd with the *Os Frontis*.

FF *Superior*, The Impressions which the Blood-Vessels make in the Frontal-bone in their Distribution on the *Dura Mater*.

G, An Internal Process continued from the *Os Cribriforme* or *Ethmoides*, Distinguishing the Right Side of the Frontal-bone from the Left.

H, That Process of the *Os Cribriforme*, call'd *Crista Galli*.

II, The Internal Part of the *Os Cuneiforme* or *Sphenoides* next the Brain.

K, The Lower-part of the Fourth Bone of the Upper Jaw, which Composes the Roof of the Mouth, by some call'd *Os Palati*.

LL, The *Processus Pterygoidei* or *Aliformis*.

MM, The Internal and Back-parts of the Two First Bones of the Upper Jaw.

N, Part of the Fourth Bone of the Upper Jaw, in which the Upper Teeth are Fasten'd.

OO, Two of the *Dentes Molares* left in both Sides of the Upper Jaw.

P, The *Septum* of the *Foramina Narium*.

Q, That Part of the *Os Cuneiforme* that was join'd to the Occipital Bone by *Syncondrosis*, which Conjunction becomes intirely Bony in Aged Bodies.

R, The Two Hinder Processes of the *Os Sphenoides*, which Compose the Back-part of the *Sella Turcica*, call'd *Ephippium*.

N.B. Between C D, and I, on either Side, is Express'd the Second Perforation of the *Os Sphenoides* or Large Rima, thro' which pass the Third, Fourth, Sixth, and a Branch of the Fifth Pair of Nerves, together with divers Blood-Vessels, particularly a Large Branch of the Carotid Artery and Vein; which Latter is Figur'd *Tab. 9. Fig. 2. F.* The other Foramen, here Express'd immediately under the last mention'd, or between it and the *Processus Pterygoidei* (L), is reckon'd the Third Foramen of the *Os Cuneiforme*, by which a Branch of the Fifth Pair of Nerves passes out of the Skull: The rest of the Foramina of the *Os Cuneiforme* are the Fourth, Fifth, Sixth, and Seventh; the First of these namely the Fourth is Express'd in the First Figure of this Table, and again in *Tab. 92. Fig. 1. I,* within the Orbit of the Eye, and in *Fig. 2. of the same Table (V V);* by this Foramen, or rather Large Rima like the Second Foramen (made by the Fourth Bone of the Upper Jaw and *Cuneiforme*) pass the Branches of the Third, Fifth and some of the Sixth Pair of Nerves, after passing thro' the Second Foramen, to the Adjacent Muscles and Parts, together with Large Blood-Vessels of both Kinds, especially to the Temporal Muscle. The Fifth Foramen of the *Os Cuneiforme*, is Compos'd at its meeting of the *Os Petrosum* and *Occipitale*, Express'd *Tab. 92. Fig. 2. X, X;* which External Aperture there Represented, is partly fill'd with a Cartilage, but its Internal Foramen Transmits the Carotid Artery to the Lateral Part of the *Sella Equina*; which Artery First enters the Cranium by the *Os Petrosum*, as Appears in the last mention'd Figure (Z Z); by this Foramen the Intercostal Nerve passes out of the Skull. The Sixth Perforation of the *Os Sphenoides* is Describ'd in the last mention'd Table and Figure (Y), and is Completely fill'd by a Branch of the Fifth Pair of Nerves: The Seventh Foramen of this Bone is Externally Laterally Adjacent to the Sixth, and is most commonly of an Oval Figure; by it a small Branch of the Carotid Artery passes to the *Dura Mater*, Accompanied with a Vein Running Parallel with it; which Frame those Sulci in the Bone, Express'd in this Figure (F F Superior), and in that of *Tab. 91. Fig. 2. F F.*



Fig. 1.

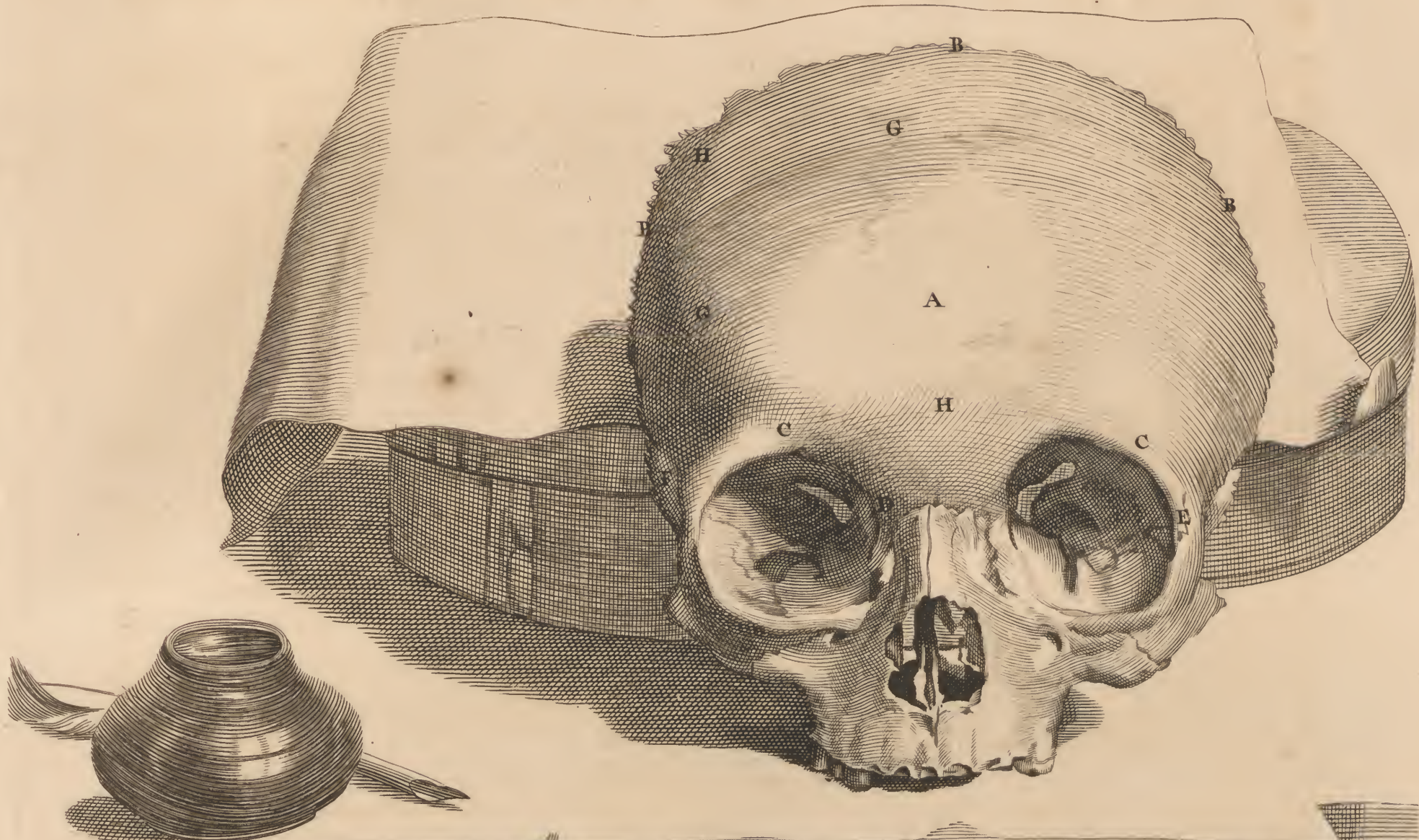


Fig. 2.

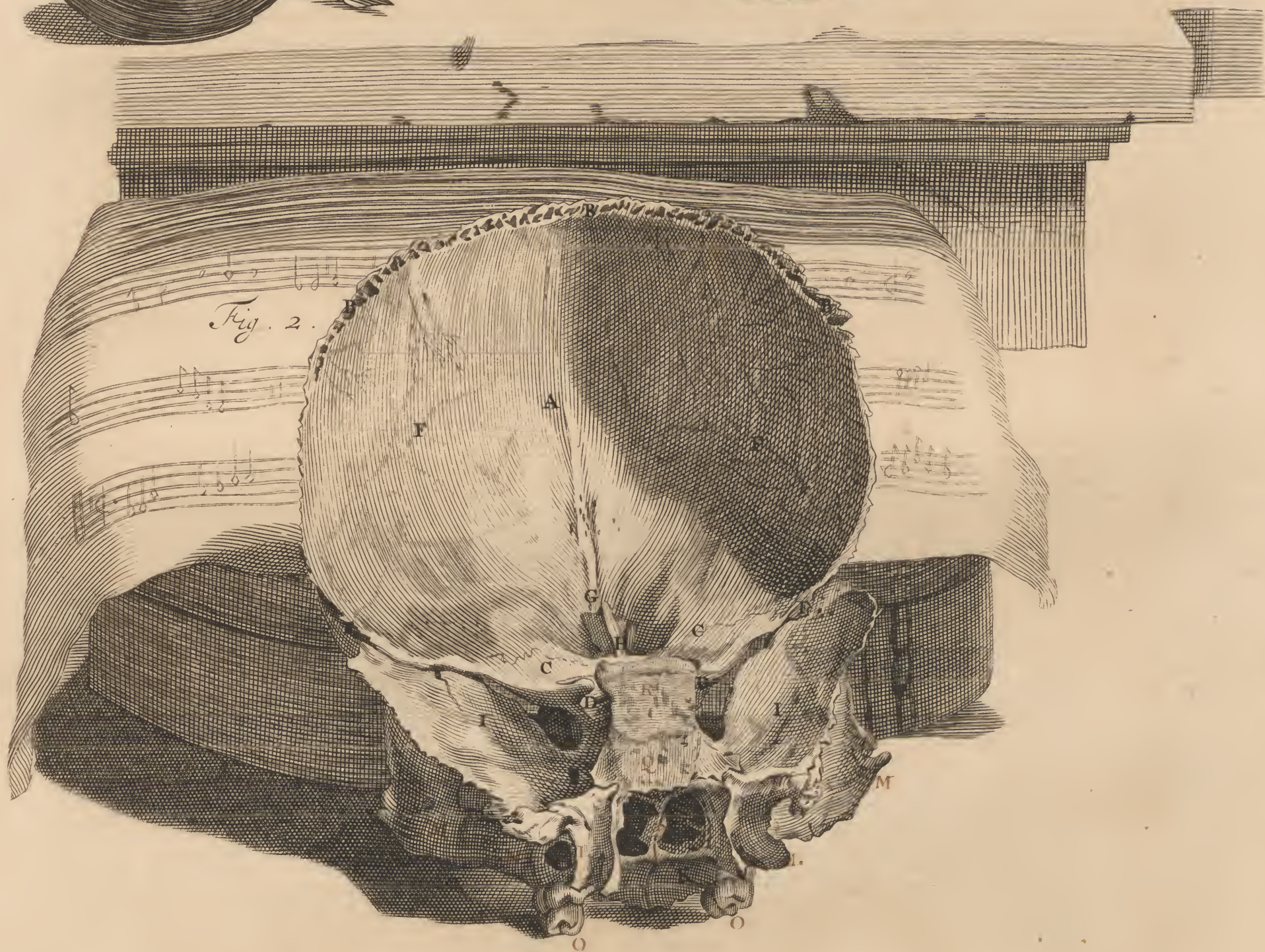




Fig. 7.



Fig. 8.



Fig. 2.



Fig. 1.



Fig. 6.



Fig. 5.



Fig. 11.



Fig. 4.



Fig. 3.



Fig. 9.



THE NINETIETH TABLE.



THE Six First Figures Represent the Internal and External Surfaces of the rest of the Proper Bones of the Skull, when Separated from each other at their Sutures.

Fig. 1.

The Bone of the *Sinciput* or *Bregma* of the Right Side.

A A, The External Convex Part of the *Bregma*, Circumscrib'd by
B B, The Coronal Suture in the Fore-part, joining it to the *Os Frontis*;
C C, The Sagittal Suture in the Superior Part, by which the Right and Left *Bregma* are Distinguish'd;
D D, The Lambdoidal Backwards, by which it is Connected to the *Os Occipitis*.
D, A, B, The Inferior Side of the *Bregma*, on which the Superior Part of the *Os Temporum*, and Part of the *Os Cuneiforme* Rests.

Fig. 2.

The Internal Surface of the Left Sincipital-bone next the *Dura Mater* and Brain.

A A, The Internal Concave Part of the *Os Sincipitis*.
B, C, D, The Furrows which the Blood-Vessels of the *Dura Mater*, make on the Internal Surface of this Bone; where may be observ'd many *Foramina* these Vessels have, for their Entrance into the *Medullium* of the Bone; sometimes we have seen these Vessels Perforate the *Cranium* Directly, in more than in one or two Places, especially towards the *Occiput*, where Two of their Large *Foramina* are commonly to be observ'd on the External Surface of the Bone; but here also they sometimes pass Obliquely into the *Medullium*: The Number and Magnitude of these *Foramina* for the Blood-Vessels, may be seen to Increase near the Impression which the Longitudinal *Sinus* makes in the *Cranium*.
E E, That Part of the *Bregma* that was Contiguous to the *Os Temporalis*, and Upper-part of the *Os Sphenoides*.

Fig. 3.

The Occipital Bone Separated at its Conjunction from the rest of the Bones of the *Cranium*.

A, The External Convex Surface of the Occipital-bone, where the Muscles Extending the Head, are Implanted, and Part of the *Musculus Cucullaris* do's Arise.
B, The First Great *Foramen* of the Occipital-bone, by which the *Medulla Oblongata* Descends out of the *Cranium* into the Great Cavities of all the *Vertebrae*.
C C, Two Depress'd Protuberancies of the Occipital-bone, which are receiv'd into the Shallow Cavities of the First *Vertebra* of the Neck.
D, Two Depressures Fram'd at the Origin of the *Musculi Recti Minores* of the Head.
E, A Third *Foramen* Appearing in the Internal Part of the Left Side of the *Os Occipitis*; by which the Nerve of the Ninth Pair on that Side pass'd out of the *Cranium*; that of the Right Side not Appearing in this Position of the Bone. The Second *Foramen* of the *Os Occipitis*, is Fram'd at its Conjunction with the *Os Temporum*, and Helps to Compose the *Specus* which receives the Bulbous Part of the Lateral *Sinus*, at the Beginning of the Internal Jugular Vein.

Fig. 4.

The Internal and Concave Part of the *Os Occipitis* next the *Dura Mater*, on Part of the *Cerebrum* and *Cerebellum*.

A, B, C, A Riling in the Bone Fram'd Collateral to the Lower-part of the Longitudinal *Sinus*, where it meets with the Two Lateral *Sinuses*.
D F, Two Depressures parting to each Side from the Inferior Part of the last mention'd Riling; in which the External Surface of the Lateral *Sinuses* are Entertain'd.
E, That Part where the Longitudinal and Lateral *Sinuses* meet, which Conjunction is call'd *Torcular Herophili*.
G G, Divers *Foramina* by which the Blood-Vessels enter the *Medullium* of the Bone.

Fig. 5.

The External Surface of the *Os Temporalis* or *Squamosum* of the Right Side, when free'd from the *Os Occipitis*, *Sincipitis*, and *Cuneiforme*.

A, The *Meatus Auditorius*, being the continued Passage from the *Concha* (Exprest Tab. 12. Fig. 1. C, D, E,) to the *Membrana Tympani*: In this *Meatus* (by some call'd *Atrium Auris*, and *Porus Auditorius*;) is contain'd the Glandulous Membrane, in which the *Cerumen* commonly call'd the Ear-Wax, is Separated from the Blood; which Membrane is frequently Ulcerated, being very liable to Obstructions in its Circulating Blood and Separated Matter, by reason of the vast Numbers of Vessels that are Necessary in the Composition of its Glandulous Structure; here also Arise Excrecencies, some of which we have seen very much like those of the *Foramina Narium*, commonly call'd *Polypi* from their Figure: Others I have Observ'd to be like Mulberries, and the Patient has suffer'd great Pain when they have been but touch'd with a Probe: Nevertheless I have frequently Consum'd them with Causticks, and the Patient has recover'd his Hearing. These Excrecencies last mention'd, commonly Arise after Impostumations on the Glandulous Membrane of the Ear.

B, A *Sinus* cover'd with a Cartilage, which receives the Head of the Long Process of the Lower Jaw, by the Mediation of a Cartilaginous Body, Describ'd in our *Appendix* Fig. 8. S, T.

C, D, That Part of the *Os Temporalis* plac'd between the *Os Occipitale* and *Cuneiforme*, call'd the Third Process of that Bone, in which the Internal Organs of Hearing are contain'd.

E, The Second Process of the *Os Squamosum* or *Temporale*, which joining with the Process of the First Bone of the Upper Jaw, Composes that Bone call'd *Jugale*.

F, The First Process of the Temple-bone, call'd *Mastoides* or *Mammiforme*, whose Internal Part is Cavernulous, and Opens into the *Tympanum*.

G, G, That Part of the Temple-bone which is Contiguous to the *Os Occipitis*.

G, H, That Part of the Temple or Squamous-bone plac'd on the *Os Sincipitis*.

H, C, The other Side Suture'd with the *Os Cuneiforme*.

Fig. 6.

The Internal Face of the *Os Squamosum* next the Brain.

A, The Process of the Temple-bone, and may be call'd *Processus Petrosum*, as well from its Appearance as Compactness; wherefore the Whole Temple-bone is by some call'd *Petrosum*. In this Process are contain'd all the Internal Organs of Hearing between A and C: As the *Membrana Tympani*, the *Tympanum*, the *Musculus Obliquus*, the *Musculus Internus* and *Musculus Stapedis*; the *Incus*, *Malleus*, *Stapis* and *Officulum Quartum*; the *Meatus à Palato ad Auram*; the *Foramen Ovale* and *Rotundum*; the Labyrinth and its *Vestibulum*; Three Semicircular Ducts, and the *Cochlea*, together with its *Lamina Spiralis*, and the Expansion of the Auditory Nerve within the Labyrinth and *Cochlea*.

B B, That Part of the *Os Squamosum* which cleav'd to the Bone of the *Sinciput*.

d, The *Foramen* by which the Auditory Nerve Enters the *Os Petrosum*, in its Way towards the Labyrinth and *Cochlea*.

Having already said something of the *Meatus Auditorius* and the Membrane which Invests it; the Order of Parts would require our next Examination of the *Membrana Tympani*, and the Muscles within the Cavity of the *Tympanum*, &c. but the succeeding Figures Representing the Four Little Bones of the Labyrinth, *Cochlea*, and their *Foramina* only; we must prosecute the Order set before us, and refer to our *Appendix* to what properly belongs to this Place. (*Viz.*) The Muscles of the Internal Ear and *Membrana Tympani*.

Fig. 7.

The Labyrinth of the Left Ear of a *Fœtus*.

A, B, C C, The Three Semicircular Ducts Clear'd of the Membranes and Part of the *Os Petrosum*; in which Bone they are entirely Inclos'd in the Adult, and no Marks of their Tracts Appear, as in the *Fœtus*.

D, That Part of the *Os Petrosum* in which the *Cochlea* is contain'd, Part of which is here Exprest, Broken up.

Fig. 8.

The Labyrinth and *Cochlea* of the Left Ear.

A, B, C, The Three Semicircular Ducts whose Cavities are Invested with a Membrane, in which the Auditory Nerve is Expanded: The Extremities of these Ducts Open into the *Vestibulum* of the Labyrinth, or Cavity immediately within the *Foramen Ovale*, Figur'd in our *Appendix*: One of the Spiral Ducts of the *Cochlea* also Opens into the *Vestibulum*.

D, Part of the *Cochlea* Open'd, which consists of Two Spiral Ducts, or One Duct Divided by a Bony *Septum*; which from its Figure is call'd *Lamina Spiralis*: One of these Ducts (as above Noted) Opens into the *Vestibulum* of the Labyrinth, at its *Basis*; the other in like Manner Ends its *Basis* at the Membrane within the *Foramen Rotundum*. The Auditory Nerve is Expanded in like Manner in the *Cochlea*, as in the Labyrinth.

Fig. 9.

The Four Little Bones of the Ear contain'd in the *Tympanum*, taken out, and Represented in their Proper Articulations with each other.

A, The *Malleolus*, the Depress'd Head of which, is receiv'd in the Shallow Cavity of the *Incus*.

B, The *Incus*, Articulated with the *Stapes* by the Mediation of the *Os Orbiculare*.

C, The *Stapes*.

... D, The *Os Orbiculare* or Fourth Bone of the *Tympanum*. These Bones we shall Figure in *Situ* in our *Appendix*.

Fig. 10.

The *Malleolus* taken from the rest of the Little Bones of the Ear, with Parts of Two of its Muscles remaining to it.

A, , The Roundish Depress'd Head of the *Malleolus*.

B, ..., A Ligament which Connects the Head of the *Malleolus* to the *Incus*.

C, The Neck of the *Malleolus*.

DD, The Two Process's of the *Malleus*, in which the External and Internal Muscles are Inserted: Besides these Process's, its Long Production call'd the *Manubrium* or Handle of the *Malleus*, is Remarkable, which Adheres to the Inside of the *Membrana Tympani*.

Fig. 11.

The *Incus* in whose Lower-part (as its here Figur'd) is a Shallow Depressure which receives the Roundish Head of the *Malleus*: Its Two Process's are here well Exprest; of which the Shortest rests in a *Sinus* of the *Os Petrosum*, within the *Tympanum*; but the Longer is Articulated with the *Stapes*, by the Mediation of the *Os Orbiculare*.

Fig. 12.

The *Stapes* so call'd from its Figure, whose *Basis* Rests on the Margin of the *Fenestra Ovalis*, as is here Exprest, and the *Os Orbiculare* lying under it; which Latter is Delineated somewhat bigger than the Life.

T H E NINETY-FIRST TABLE.

Fig. 1.



H E W S the External Convex Surface of the Upper-part of the Skull, and its Proper Sutures, Elegantly Express'd.

A, B, The Forehead-bone, by some call'd *Os Coronale*, *Inverecundum*, and *Os Puppis*.

C, The *Os Sincipitis* or *Verticis*, by some call'd *Bregma*, either from the soft moist Brain lying under it, or from its thin moist Constitution in Infants, and sometimes in the Adult.

D, Part of the *Os Occipitis*, by some call'd *Basillare*, *Os Proreæ*, *Os Memoriae* and *Os Pyxidis*.

E E, The Coronal Suture.

F, The Sagittal Suture or *Sutura Longitudinalis*.

G G, The *Sutura Lambdoides*.

Tho' the Sutures here Express'd are Regular according to their Common Appearance, yet in divers Subjects we find Nature sport very considerably; sometimes the Longitudinal Suture is Double, at other times it passes Obliquely towards the Coronal Suture, and in some Subjects it Frames an *Os Triquetrum* at its Conjunction with the Coronal Suture, or else divers small Bones of Various Figures; the like may be sometimes Observ'd in the *Sutura Lambdoides*, as also in the Coronal Suture; of which Latter, the Figure here gives a Specimen on the Right Side.

Fig. 2.

The Internal Concave Surface of the Upper-part of the Skull when Saw'd from its *Basís*.

A A, The Inside of the *Offa Bregmatis*.

B B B, The Sutures as they Appear withinside the Skull Approaching to a simple straight Line, which Conjunction of Bones is call'd *Harmonia*.

C, The Internal Part of the *Os Frontis*.

E, A Portion of the Inside of the *Os Occipitis*.

F F, The Channels Fram'd by the Blood-Vessels of the *Dura Mater*: These Insculptures or Furrows of the Bone, I found very Large in the Skull of a Person I lately Dissected, who Died Apoplectick, in whom the Blood-Vessels of the *Dura Mater* were proportionably Augmented to the Magnitude of a Goose-Quill. In this Subject divers Large *Foveæ* Appear'd in the Skull, breaking out as it were from the Impression of the Longitudinal *Sinus*; One of which *Foveæ* exceeded Half an Inch in its Diameter. When the Top of the *Cranium* was oppos'd to the Light, the *Foveæ* above mention'd, as well as the Large Furrows of the Vessels Appear'd Transparent, not unlike the Horn commonly made Use of in Lanterns; nor indeed did the Thickness of the Skull in those Parts much exceed it: By this, we may be Inform'd with what Caution we ought to Use the *Trepan* in Perforating the Skull, especially near the Longitudinal Suture, as also Laterally on the *Bregma*, where those Vessels usually take their Course; and that more especially when the Patient has suffer'd under Habitual Head-Aches, which was Remarkable in the Person last mention'd, even from his Infancy; for doubtless these Cavities and Furrows have an early Date, from an Irregular Formation of the Blood-Vessels; whence the Refluent Blood is Subject to be Retarded, and the Neighbouring Parts as the *Pericranium*, &c. suffer Tension and Pain.

B *Superior* and E, The Channel or Impression which the Longitudinal *Sinus* makes in the Middle and Upper-part of the Skull, according to the Length of the Sagittal Suture.

Fig. 1.



Fig. 2.





Fig. 4.



Fig. 6.



Fig. 7.

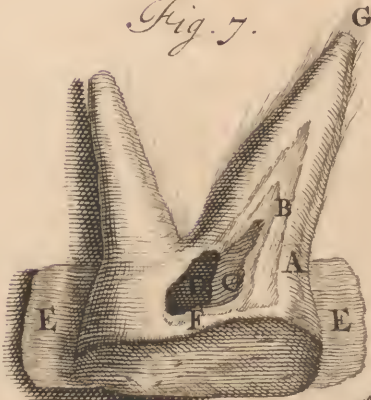


Fig. 1.



Fig. 2.

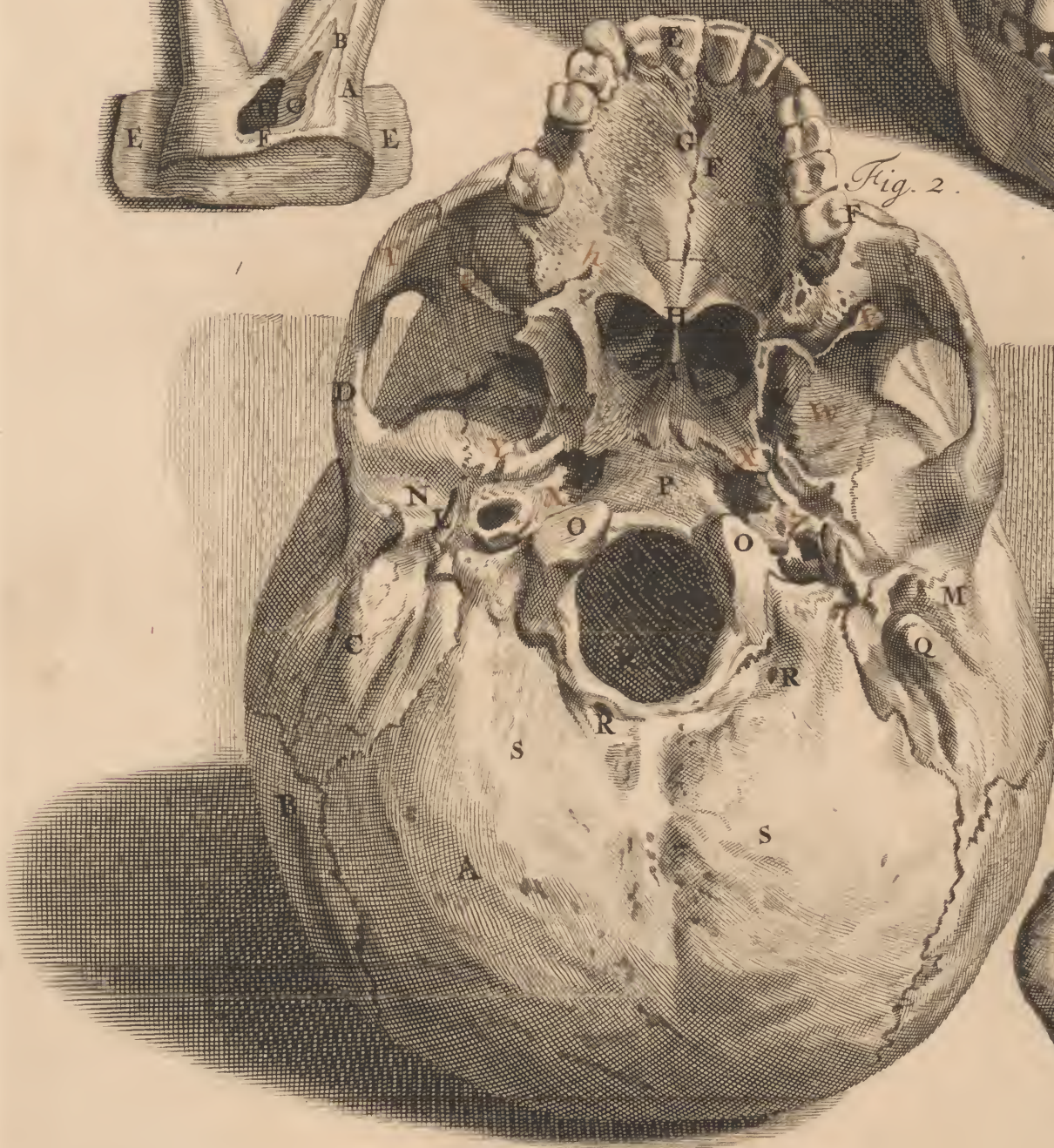


Fig. 3.

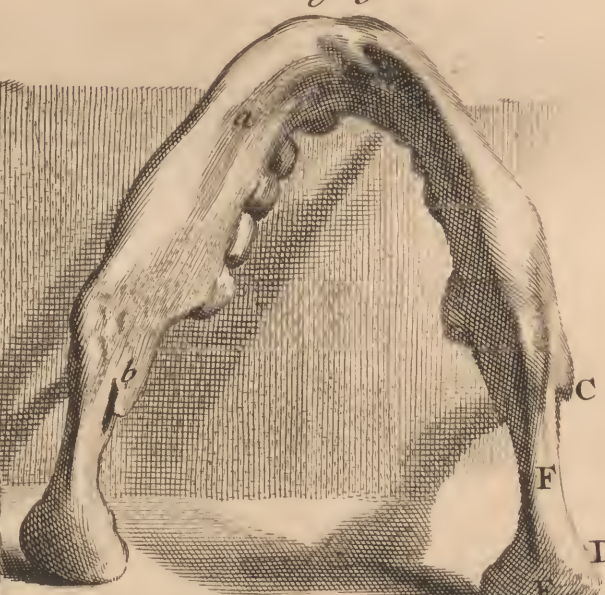


Fig. 9.



Fig. 8.



Fig. 5.



THE NINETY-SECOND TABLE.



Fig. 1.

SHEWS the Fore-part of the Skull, in which Part of the Proper Bones of the Skull already Describ'd, and divers of those of the Upper Jaw and the Bones of the Lower Jaw, are well Express'd.

A, B, C, The First Bone of the Upper Jaw, constituting the Inferior Part of the Orbit of the Eye, and Part of its Lesser *Cantibus*, together with Part of the *Os Jugale* and Cheek: B, That Part of it which Composes Part of the *Os Jugale*.

D, The Second Bone of the Upper Jaw, which may be call'd *Os Lachrymale*, because the *Ductus* Arising from the Two *Puncta Lachrymalia*, passes thro' it into the *Foramina* of the Noftril on that Side, together with a Branch of the Fourth Pair of Nerves, and some Remarkable Blood-Vessels.

Anatomists disagree in their Descriptions and Number of the Bones of the Upper Jaw; *Galen in Libel. de Offib.* reckons XI. *De Partium Usu* IX. In *Introductorio sive Medico Galeno Adscripto* XII. to which latter *Vesalius* Subscribes; but *Columbus* mentions XIII. and at the same time in his Description, omits the Third Pair of *Vesalius* and Others, and instead of them adds Two others, or another Pair call'd *Ossa Spongiosa*, plac'd within the Noftrils: We can't but agree with *Vesalius*'s Description, being so very clear and intelligible by the Appearance of most, if not all Skulls; nor can we find any Reason to omit what *Columbus* has added, so that the Bones of the Upper Jaw are XV in Number; viz. the VI. Pair of *Vesalius*, the Two *Ossa Spongiosa* and *Septum Narium* of *Columbus*, by him call'd *Vomer*, from the likeness it has to a Plow-Share or Coulter.

The Third Bone of the Upper Jaw is scarcely Express'd in this Figure, or in that of *Tab. 89. Fig. 1.* by reason of the Foreshorten'd Site (as Painters Term it) it's in, in this Position of the *Cranium*: This Third Bone of the Upper Jaw is commonly of a Quadrangular Figure and very Thin, plac'd within the Orbit: The precise Place of its Situation is Forewards, adjoining to the Second Bone of the Upper Jaw, or *Os Lachrymale*; Backwards it sometimes Touches the *Os Cuneiforme* at One Angle only; Above it's Suture'd with the *Os Frontis*; Below with the Fourth Bone of the Upper Jaw.

E, The Fourth Bone of the Upper Jaw, which is the Largest of all the Bones of the Jaw, Composing the Lower-part of the Orbit, the greatest Part of the Palate, and containing all the Upper Teeth in its Sockets; its Upper-part is join'd to the Lower-part of the Forehead-bone, the Bone of the Nose, and Second Bone of the Upper Jaw; Laterally to the First Bone of the Upper Jaw; Backward to the Third, and *Os Cuneiforme*, and Lastly to its Fellow: The Large *Foramen* of it (here Express'd immediately under the Orbit of the Eye) serves to Transmit a Branch of the Fifth Pair of Nerves to the Muscles of the Lips, &c. The Second, Third, Fourth and Fifth *Foramina*, are in Common with it and other Bones; of these, the First is Compos'd at its Conjunction with the *Os Lachrymale*; (D) the Second with the *Os Cuneiforme*; (I) the Third at its Conjunction with its Partner near the *Dentes Incisores* *Fig. 2. G*; and the Fourth at its Conjunction with the *Os Palati* (*Ibid. Fig. 2. h h*) Backwards: It has a Large Cavity which Opens into the *Foramen* of the Nose; in the Lower-part of which Aperture the *Os Spongiosum*, mention'd by *Realdus Columbus*, is plac'd. This Cavity is call'd *Antrum Maxillæ Superioris*; by some call'd *Antrum Highmoreianum*, for what reason I know not, since 'twas Describ'd long before Dr. *Highmore*, as Appears by *Vesalius*, *Columbus*, *Baibinus*, &c.

F, The Fifth Bone of the Upper Jaw, which with its Partner Composes the Upper Bony Part of the Nose, its Sutures or Conjunctions with the other Neighbouring Bones and Figure are here so well Express'd, that it needs no other Description.

G, The *Septum Narium* whose Bony Fore-part here Express'd, is Compos'd partly by the *Os Cribriforme*, and partly by a Process of the Fourth Bone of the Upper Jaw.

H, The Sixth Bone of the Upper Jaw or *Os Spongiosum*; this and its Partner are mention'd by *Columbus*, and call'd *Spongiosa*: These we have constantly observ'd to be Distinct Bones in Humane Skulls, as well as in those of Quadrupedes; in which latter, these *Ossa Spongiosa* have a very Remarkable Disposition; they being Broad, Thin, Bony Bodies, Roll'd up very much like a Piece of Paper, Express'd *Tab. 61. Fig. 2. D D*: Nor is this Involute Disposition of these Bones only in Quadrupedes, but in Humane Bodies also it's so Dispos'd (tho' not so much Turn'd in) and Cover'd every where with the Pituitary Membrane, which Invests the Inside of the *Foramina Narium*; on which the Branches of the Olfactory Nerves are Expanded.

I, A Chink or *Foramen* Compos'd by the *Os Cuneiforme*, together with the Fourth Bone, and Part of the First Bone of the Upper Jaw; commonly call'd the Fourth *Foramen* of the *Os Sphenoides*, or the Third *Foramen* of the Fourth Bone of the Upper Jaw.

K, The *Os Frontis*.

L, Part of the Left *Bregma*.

M, The *Os Squamosum* or *Temporale*.

Fig. 2.

The Inferior Surface of the *Basis* of the Skull.

A, The *Os Occipitis*.

B, Part of the *Bregma*.

C, That Part of the *Os Temporale* call'd *Processus Mammillaris*.

D, The *Os Jugale* Compos'd of a Process of the *Os Temporum* and First Bone of the Upper Jaw.

E, The Four *Dentes Incisores*.

F Inferior, The Eight *Dentes Molares*, Four on each Side.

The rest are the Two *Dentes Canini*.

G, The Fourth *Foramen* of the Fourth Bone of the Upper Jaw.

G, F, The Lower-part of the Fourth Bone of the Upper Jaw next the Palate, by some therefore call'd *Os Palati*.

H, The Seventh Pair of Bones of the Upper Jaw, call'd *Ossa Palati*; these Bones are Perforated on each Side (h h) near the *Dentes Molares*; which Perforation is in Common with the Fourth Bone of the Upper Jaw, and is call'd the Fifth Perforation of that Bone, as above mention'd.

These Seven Pair of Bones of the Upper Jaw make Fourteen on each Side, to which *Realdus Columbus* adds another which has no Partner, and is reckon'd the Fifteenth Bone of the Upper Jaw.

I, The Fifteenth Bone of the Upper Jaw, by *Columbus* liken'd to a Coulter or Plow-Share, making the Back-part of the *Septum Narium*.

K, The *Processus Pterygoideus* or *Aliformis*, reckon'd the First of the External Process's of the *Os Sphenoides*.

The *Musculus Pterigoideus Internus*, Arises from the Internal Part of the *Sinus* of these Process's, *Vid. App. Fig. 8. g*.

L, The Lower-part of the *Processus*, or *Appendix Styloides*; its Upper-part being Broken off on both Sides in this Figure.

M, The Margin of the *Meatus Auditorius* in the *Os Temporale* of the Left Side.

N, The *Sinus* of the *Os Petrosum* or *Temporale*, which receives the Head of the Long Process of the Lower Jaw.

O O, Two Process's of the *Os Occipitis* Articulated with the First *Vertebra* of the Neck.

P, The Anterior *Appendix* or Process of the *Os Occipitis*; by *Veslingius* in his *Animadversiones* on his Figures of Chap. XIII. Erroneously call'd *Os Sphenoides*.

Q, The *Processus Mammiformis* or *Mastoides* of the *Os Temporum*, on the Left Side.

R R R, The Great *Foramen* of the *Os Occipitis*, by which the *Medulla Oblongata* passes out of the Skull.

S S, The *Asperities* and *Sinus's* of the Bones of the *Occiput*, made by the Insertions of the Muscles Moving the Head.

T T, The Internal Parts of the First Bones of the Upper Jaw.

V V, The Fourth *Foramen* of the *Os Cuneiforme*; *Vid. Fig. 1. I*.

W, Part of the *Os Cuneiforme* next the *Aliform* Process's.

XX, The Fifth *Foramen* of the *Os Cuneiforme*, Compos'd at the Meeting of that Bone with the *Os Petrosum*, and Fore-part of the *Occipital-bone* on both Sides.

Y, The Sixth *Foramen* of the *Os Cuneiforme* at the Root of the *Processus Pterygoideus*, by which a Branch of the Fifth Pair of Nerves pass out of the Skull.

Z Z, The *Foramina* of the *Ossa Temporum*, by which the Carotid Arteries First Enter the *Basis* of the Skull.

Fig. 3.

The Inferior Part of the Lower Jaw.

a, The Internal Part of the Lower Jaw, whence the *Musculus Mylohyoideus* do's Arise.

b, A Large *Foramen* in the Internal Part of the Lower Jaw, by which the Blood-Vessels and a Branch of the Fifth Pair of Nerves pass to the Teeth, *Fig. 1. b*. The External *Foramina* of this Bone, by which the Branches of those Vessels pass out of the Bone again to the Muscles of the Lips.

C, A Fore-shorten'd Appearance of the *Processus Coronæ* of the Lower Jaw, call'd the Short Process.

DE, The Head of the Long Process of the Lower Jaw call'd *Condylus*, which is Articulated with the *Os Temporum* by the Mediation of a Moving Cartilage; *Vid. App. Fig. 8. T, S*.

F, The *Cervix* or Neck of the Long Process of the Lower Jaw.

Fig. 4.

The Teeth of the Upper and Lower Jaw of one Side only, when taken out of their *Alveoli* or Sockets.

A A, &c. The *Dentes Incisores*;

B B, The *Canini*;

C C, &c. The *Molares*.

Fig. 5.

The Right Side of the Lower Jaw in which the *Alveoli* or Sockets, after the Extraction of the Teeth, are Represented.

A, The *Processus Coronæ*, to which the Temporal Muscle is fixt.

B, The *Processus Condylus*.

CC, The *Alveoli* or Sockets of the Teeth.

Fig. 6.

A A, &c. Divers Teeth Broken or Divided Variously, to shew their Internal Cavities or *Sinus's*.

Fig. 7.

One of the Grinding Teeth in like Manner Broken to Exhibit its Internal Structure, Figur'd much Bigger than the Life.

A, The External Stony Part.

B, The Bony *Striae* of the Tooth Divest'd of its Stony *Cortex*.

C, The Internal Bony Part of the Tooth becoming more Porous, as it Approaches its Middle Cavity.

D, The Middle Cavity or Hollow of the Tooth, Cover'd with a Membrane on which the Blood-Vessels and Nerves of the Tooth are Distributed; by which the Tooth derives the Matter which makes it Germinate and repair that loss it sustains by frequent Use on its Cortical or Stony Part: Thus when one Tooth is wanting in either Jaw, the Opposite Tooth Grows Longer for want of its Resistance in Mastication. When this Internal Membrane within the Cavity of the Tooth is Expos'd thro' the Breaking away of the Upper-part of the Tooth, it is most Exquisitely sensible to the Touch of any hard Body, or cold Liquor; and very frequently a Carnous *Fungus* will Arise from it: In these Cases the drawing out of the Tooth is the best Remedy.

E, The External Membrane lying on that Part of the Tooth within the Socket or *Alveolus*: They who Doubt of the Existence of such a Membrane may be satisfied therein; After a Tooth is drawn from a Living or lately Dead Body, and laid in Water for some Days, this Membrane will be very Conspicuous even to the Naked Eye.

F, The *Basis* of the Tooth;

G, The *Apex* of one of its Roots where the Blood-Vessels Arising from the *Parietes* of the *Alveolus* or Socket, are Express'd, Running into that Part of it which lies within the *Alveolus*.

Fig. 8.

The Stony Parts of the Teeth of a *Fœtus*, which lying within the Jaw-bones, are Cover'd with the *Periostium*, as Appear'd in the Dissection I sometime since made of a Humane *Fœtus*; *Vid. Tab. 101. L L*.

A A, The Stony *Capsula* of one of the *Dentes Incisores*.

B B, That of the *Caninus*.

C C, &c. The Superior Stony Parts of the *Dentes Molares* in a *Fœtus*.

Fig. 9.

The *Os Hyoides* or Bone of the Tongue, together with Two Process's of the Scutiform Cartilage.

A, The Middle Bone of the *Os Hyoides*,

B, Its Superior Part next the Tongue,

C, Its Internal Concave Part towards the *Fauces*,

D, Part of the Superior Long Process of the Scutiform Cartilage of the Left Side loosely Tied to the Extremity of the *Os Hyoides* of the same Side; that of the Right Side is not Letter'd in this Figure.

E, One of the Two Lateral Bones which Helps to Compose the *Os Hyoides*.

A a a

THE

T H E N I N E T Y - T H I R D T A B L E .



FROM the Bones of the Head, we Pass to those which Support it and the Trunk of of the Body. (*viz.*) The Bones of the Neck, Back, Loins, *Os Sacrum* and *Coccygis*; all these together have generally obtain'd the Name of *Spina*. Since it's Necessary the Head and Trunk of the Body should be variously Mov'd, it was therefore Requisite their Supporter should not Consist of One Bone only, but that it should be Divided into many, which are call'd *Vertebrae*; of these, there are Reckon'd Twenty-four; (*viz.*) Seven of the Neck; Twelve of the Back, and Five of the Loins. In some Subjects we have Found but Six *Vertebrae* belonging to the Neck; in another we Found Thirteen of the *Thorax*, and as many Ribs; as Appears in a Skeleton now Hanging in the Middle of the Anatomical Theater of the Surgeons of *London*; The like I don't Doubt may, or has been Observ'd of the Loins: The Inferior Part of the Spine is Compos'd of the *Os Sacrum* and *Coccygis*.

Fig. 1.

The Inferior Part of the First *Vertebra* of the Neck, call'd *Atlas*, because it Supports the whole Head.

A, Its Fore-part:
B, Its Back-part, wanting a Spinal Process:
CC, Its Transverse Processes Perforated to Transmit the Cervical Artery and Vein.

DD, Two Oval Processes, whose Surfaces are Smooth and Cover'd with a Cartilage, which Processes move to either Side on those of Fig. 3. BB.

Fig. 2.

The Upper-part of the First *Vertebra* of the Neck.

A, The Inside of the Back-part of the First *Vertebra* of the Neck next the *Medulla Spinalis*.

B, The Outside and Fore-part of the same *Vertebra*:

CC, Two Processes whose Two Shallow Cavities are Articulated with Two somewhat Convext Prominencies of the *Os Occipitis*, Tab. 92, Fig. 2. OO; in which Articulation the Head is Mov'd in Nodding Fore-wards, Back-wards and Side-ways.

D, A *Sinus* in the Upper-part of this *Vertebra*, in which the Contorted Trunk of One of the Cervical Artery, passes towards the Great Foramen of the *Os Occipitis*.

N.B. It is Necessary the Great Foramen of this First *Vertebra* of the Neck should be much Larger than any of the Inferior, lest the Beginning of the *Medulla Spinalis* should be Incommoded in Turning the Head to One Side; in which Action, this First *Vertebra* Moves with the Head on the Axis or Tooth-like Process of the Second *Vertebra* of the Neck.

Fig. 3.

The Superior Part of the Second *Vertebra* of the Neck.

A, The Tooth-like Process on the Fore-part of this Second *Vertebra* Inserted behind the Fore-part of the First *Vertebra* (A, B, Fig. 1, 2.) whose Apex A, is Fastned by a Ligament to the Margin of the Fore-part of the Great Foramen of the *Os Occipitis*: Vid. Appen. Fig. 8. E.

BB, Two Processes, whose Cartilaginous Surfaces are of an Oval Figure, and Correspond to those of Fig. 1. DD. whereby the Rotatory Motion of the Head is Perform'd. The other Remarkable Parts of this Figure may be known by the Explanation of the Following.

Fig. 4.

The Inferior Part of the Second *Vertebra* of the Neck:

A, The Tooth-like Process call'd *Epistropheus*.

B, The Inferior Surface of the Fore-part of the Second *Vertebra*, join'd to the Superior and Fore-part of the Third. Fig. 5. C.

CC, Its Transverse Processes Perforated to Transmit the Blood-Vessels, as in Fig. 1. CC.

DD, Its Two Oblique Descending Processes plac'd on the Two Oblique Ascending of Fig. 5. A.

E, The Internal Part of the Second *Vertebra* next the *Medulla Spinalis*.

F, The Double Spinal Process, to which the Superior *Musculi Interspinales* are Inserted.

Fig. 5.

The Superior Part of the Third *Vertebra* of the Neck.

A, One of its Oblique Ascending Processes.

B, Its Transverse Process Perforated like as in the Two First *Vertebrae*.

C, The Superior Part of the Body of the Third *Vertebra*, on which the Inferior Part of the Second is Plac'd.

N.B. The Rest of the Figure may be Understood by the Explanation of the Preceding.

Fig. 6.

The Lower Part of the Third *Vertebra* of the Neck;

A, Its Oblique Descending Process:

B, Its Transverse Process Perforated as above Noted.

Fig. 7.

The Superior Part of the First *Vertebra* of the Back.

A, Its Transverse Process not Perforated like those of the Neck.

B, Its Spinal Process on the Back-part.

C, A Shallow Depressure on the Fore-part of the Transverse Process which Receives the Tubercle of the First Rib. Vid. Tab. 94. Fig. 2. B.

D, One of the Oblique Ascending Processes, which Receives the Descending of the Last *Vertebra* of the Neck.

E, The *Sinus*, in which some of the Axillary Nerves pass out of the *Specus* or Great Foramen of the *Vertebra*.

Fig. 8.

The Inferior Part of the same First *Vertebra* of the Back or *Thorax*:

A, Its Transverse Process:

B, Its Spinal Process.

C, A Shallow Depressure in the Transverse Process, to which the Second Tubercle of the First Rib is Connected:

D, Its Oblique Descending Process, Receiv'd by the Ascending of the Next *Vertebra*.

After Taking out the *Viscera* from the Cavity of the *Thorax* of the Late Earl of Peterborough, I was Desir'd by One of his Physicians Dr. Johnston (who constantly Attended his Lordship some Time before his Death) to Examine the *Vertebrae* of the *Thorax*, because his Lordship did not only Complain of very Great Pains about the Eighth and Ninth *Vertebrae* of that Part, and particularly the Right *Hypochondrium*, &c. but One of the Spinal Processes of those *Vertebrae* was Observ'd to be very Prominent some Weeks before his Death; nor could he Endure any Motion of the Trunk of his Body: Besides at that Time the Lower Limbs were Destitute of Motion, as well as Exquisite Sense of Feeling. On Freeing the Descending Trunk of the *Arteria Magna* and *Ductus Thoracicus* from the Fore-parts of the *Vertebrae* of the *Thorax*, I Found a Tumor, whose Thick Hard Membrane was chiefly Fram'd of the Ligaments of the *Vertebrae*: I Divided the Tumor, and a Brownish Colour'd Matter Flow'd from it: On farther Examination I Found the Upper and Fore-part of the Ninth, and in like Manner the Lower Part of the Eighth *Vertebrae* of the *Thorax* Consum'd and Gone; insomuch that I could without Difficulty put the Top of my Fore-finger into the Foramen, and Feel the *Medulla Spinalis* Cover'd with its Membranes only. I Doubt not but Part of the Matter contain'd in this Tumor, had Descended into the Lower-part of the *Specus* of the *Vertebrae* of the Loins and *Os Sacrum* (since it lay Open) whereby the Inferior Nervous Distributions were affected, and their Proper Office Perverted; but Decency Forbid our Scrutiny in this Case, since the Bodies of those *Vertebrae* must have been Cut away with a Chisel to have made such a Discovery.

Fig. 9.

The Upper-part of One of the *Vertebrae* of the Loins:

A, Its Transverse Process: The Rest of its Parts may be known by the Explanation of the Fifth and Seventh Figures.

Fig. 10.

The Inferior Part of the same *Vertebra* of the Loins, whose Explanation may be Refer'd to Fig. 8.

Fig. 11, 12.

The Superior Parts of the Two Lower *Vertebrae* of the Loins;

A A, Their Transverse Processes:

BB, Their Oblique Ascending Processes:

CC, The Bodies of the *Vertebrae*.

DD, Their Spinal Processes.

Fig. 3.

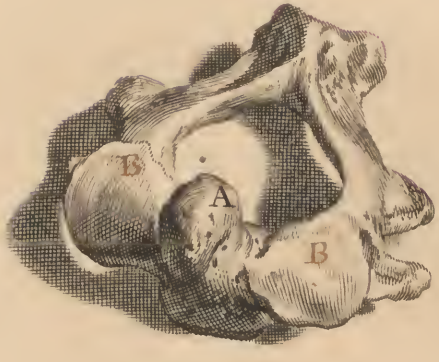


Fig. 1.



Fig. 4.

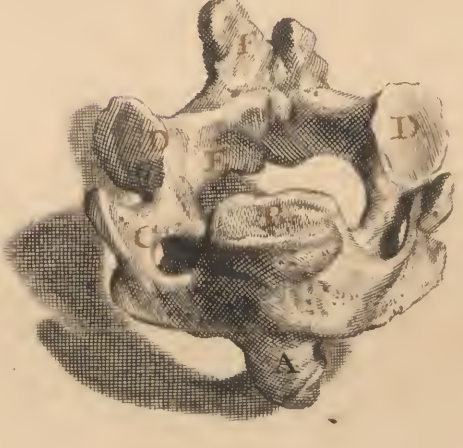


Fig. 2.

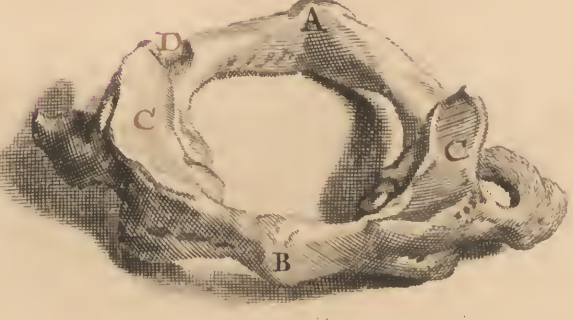


Fig. 5.



Fig. 6.

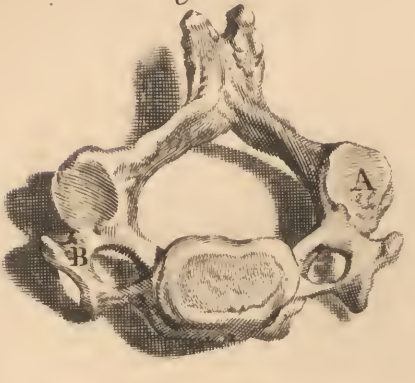


Fig. 9.

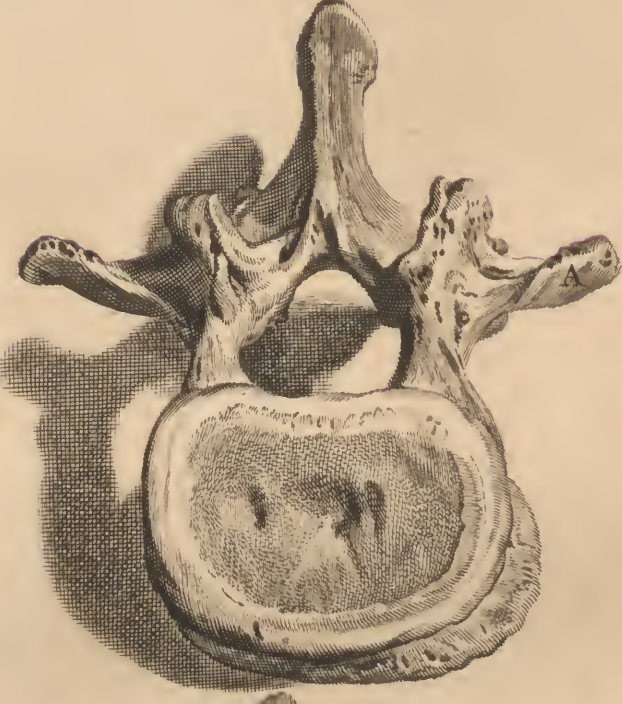


Fig. 7.



Fig. 11.



Fig. 8.



Fig. 10.



Fig. 12.



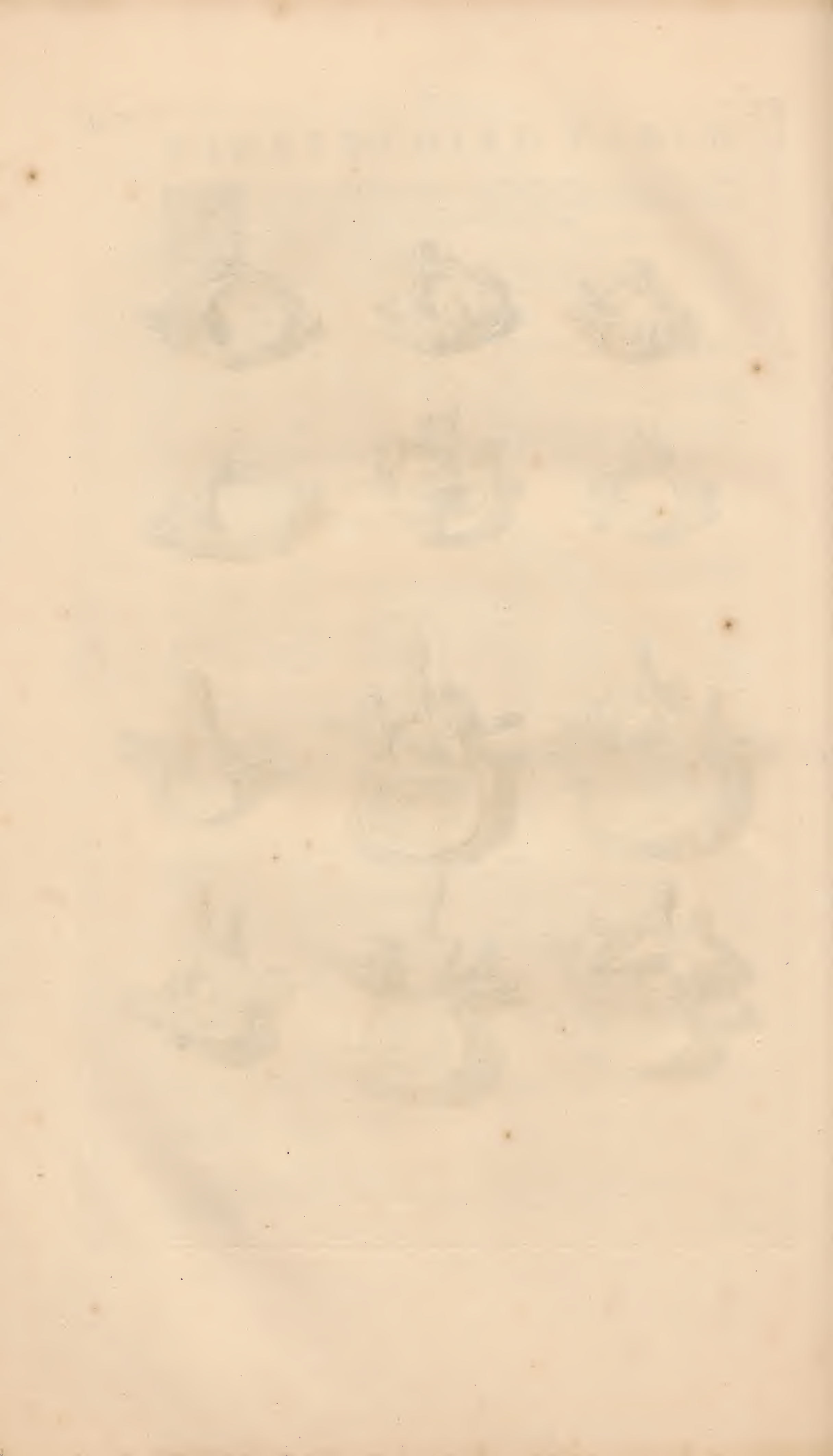


Fig. 2.



Fig. 1.



Fig. 3.

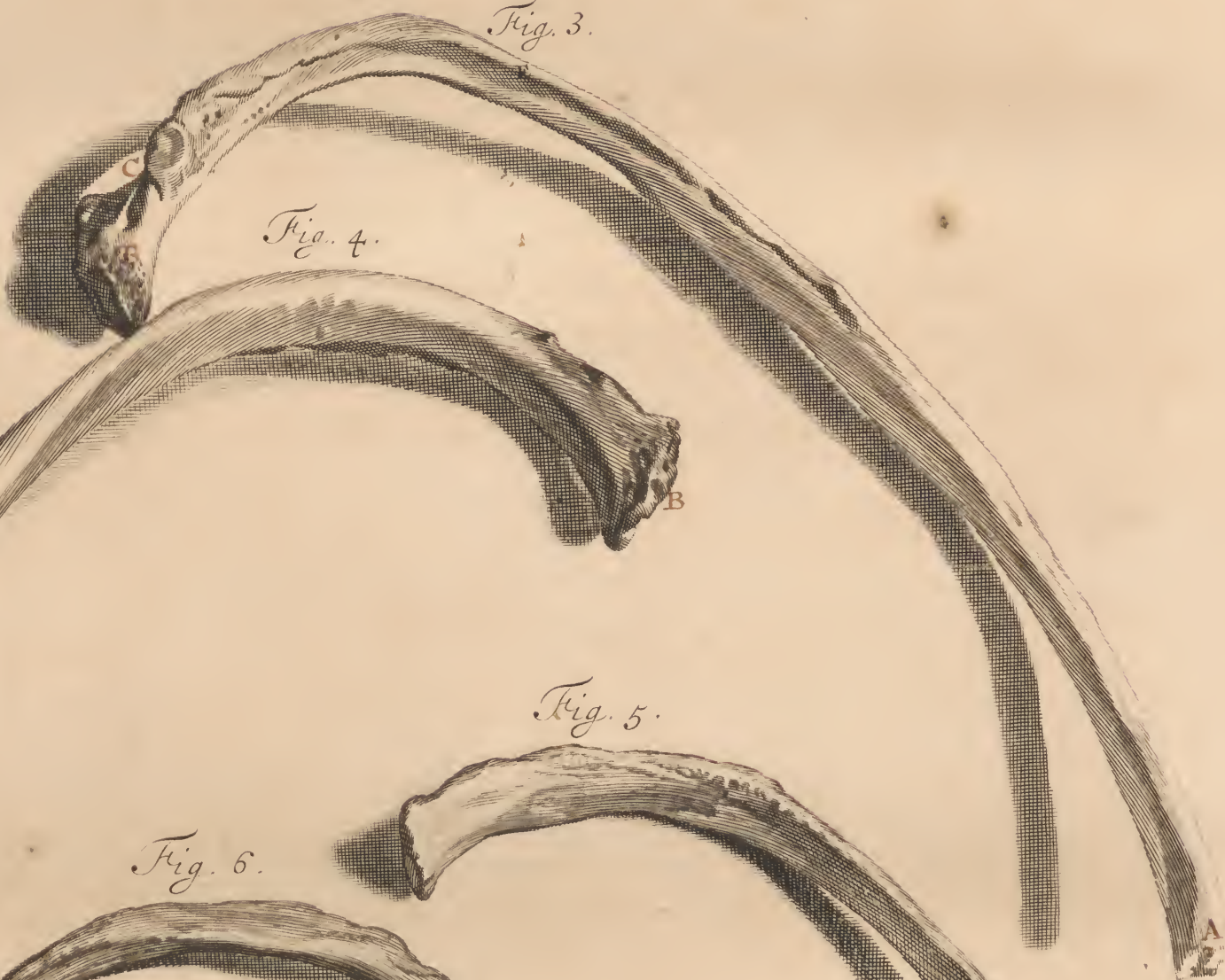


Fig. 4.



Fig. 5.



Fig. 6.



Fig. 8.



Fig. 7.



T H E NINETY-FOURTH TABLE.



THE Ribs are Twelve in Number on either Side; sometimes we have found Thirteen, at other times but Eleven on each Side; and frequently Twelve on one Side and Eleven on the other: The Seven Superior are call'd, *The True Ribs*, which are join'd with the *Sternum* or *Os Pectoris*, by the Mediation of Cartilages. The Inferior Ribs are the *Nothæ, Spuriæ*, or Bastard Ribs. The Nine Superior Ribs have a Twofold Articulation to the *Vertebræ* of the Back; the one Collateral to the Fore-parts of the Bodies of the *Vertebræ*; the other to the Fore-parts of their Transverse Process's. The Two and sometimes Three Inferior Ribs, are only Articulated to the Bodies of the *Vertebræ*, and don't touch their Transverse Process's. The Lowest and Last Rib has not its Cartilaginous Extremity Fasten'd to its Superior Rib, as the rest of the Bastard Ribs have, but its Extream Point gives an Origin to Part of the Oblique Descending Muscle of the *Abdomen*.

Fig. 1.

The Inferior Part of the First Rib of the Right Side.

Fig. 2.

The Upper-part of the same Rib.

A A, That Part of the First Rib next the *Sternum*.

B B, Its Protuberance Articulated in a *Sinus* of the Transverse Process of the First *Vertebra*.

C C, Its Little Head receiv'd in a *Sinus* of the Anterior Bodies of the First *Vertebra*, Laterally.

D D, Its middle Broad Flat Part.

Fig. 3.

The Lower-part of the Sixth or Seventh True Rib of the Right Side.

Fig. 4.

The Superior Part of the same Rib.

A A, That Extremity of the Bony Part of the Rib join'd to the Cartilage, plac'd between it and the *Sternum*.

B B, The other Extremity Articulated to the *Vertebra* of the Back Laterally.

C, A Tubercle Articulated to the Transverse Process of the *Vertebra*.

E, *Fig. 3.* A *Sinus* Fram'd in the Inferior Part of the Rib for the Passage of the Blood-Vessels, which ought to be avoided in Perforating the *Thorax*, in Case of an *Empyema*, &c.

Fig. 5.

The Lower Edge and Internal Part of the Eleventh Rib of the Right Side.

Fig. 6.

The Upper Edge, and Part of the External and Internal Parts of the same Rib.

Fig. 7, 8.

The Internal and External Parts of the Twelfth Rib.



T H E NINETY-FIFTH TABLE.



PRESENTS the *Scapulæ*, *Claviculæ* and *Os Pectoris*, or *Sternum*.

Fig. 1.

The External Convext Part of the Left *Scapula* or Shoulder-blade.

A B, The Outside of the *Scapula* a little Arch'd or Convext.

C, The *Spina Scapulæ*;

D, Its Extremity call'd *Acromion*, Articulated to the Extremity of the *Clavicula*.

E, The *Processus Coracoides* or Crow's-Bill-like Procefs, by some call'd *Ancyroides* or Anchor-like.

F, The *Processus Brevis*, or Short Procefs of the Shoulder-blade which receives the Head of the Arm-bone.

The Rest of the Parts which Circumscribe the *Scapula*, are Explain'd in the following Figure.

Fig. 2.

The Internal Concave Part of the Right Shoulder-blade.

A B B, Various Eminencies on the Inside of the *Scapula*, whence the Fibres of the *Musculus Subscapularis* take their Origin.

C, The Inferior Angle of the *Scapula*.

D, The Superior Angle of the *Scapula*.

E Superior, The *Processus Coracoides*.

F F G, The *Foramina* for the Blood-Vessels, which pass in and out from the *Meditullium* of the Bone.

G Inferior, The *Sinus* of the Short Procefs of the *Scapula*, in which the Head of the *Os Humeri* is receiv'd.

G Superior, The Internal or Lower Part of the *Acromion* of the *Scapula*.

H, The *Cervix* or Neck of the Short Procefs.

N. B. From C to D, is call'd the *Basis Scapulæ*; From D to F, the *Costa Superior*; From H to C, the *Costa Inferior Scapulæ*.

Fig. 3.

The Superior Part of the Right *Clavicula* or Channel-bone: Some call the *Claviculæ*, *Ossa Humerorum*: They are also call'd *Furculæ*.

Fig. 4.

The Inferior Part of the Left Clavicle.

A, That Part of the Clavicle Articulated to the Superior Part of the *Os Pectoris* or *Sternum*, in which Articulation a Cartilaginous Body is plac'd not Unlike that of the Lower Jaw with the *Os Temporum*. Vid. App. Fig. 8. S, T.

B, That Extremity of the *Clavicula* join'd to the *Acromion* of the *Scapula*, by Two almost Plain Cartilaginous Bodies appos'd to each other, and Connected by Ligaments: This Conjunction of the Clavicle with the *Acromion* of the Shoulder-blade we have more than Once seen suffer a Dislocation: when the Patient has fallen from some High Place, and the Top of the Shoulder or *Acromion* of the *Scapula* has First come to the Ground. The *Scapula* with the Arm in such Case will be Deprest, and the Outmoft Extremity of the Clavicle will be seen to Arise up: This Dislocation we Mention, because we don't find it taken Notice of (or at least not commonly) by Authors.

C, The Middle Superior and External Part of the Right *Clavicula*.

D, The Middle Inferiour and External Surface of the Left *Clavicula*. The Use of the *Claviculæ* is to support the *Scapulæ*, together with the *Ossa Humerorum*.

Fig. 5.

The External and Forepart of the *Os Pectoris* or *Sternum*, whose Appearance in the Adult Differs very much from that of the *Fœtus*; as may be seen Tab. 101. 6. In Aged Bodies it's intirely United into One Bone; in some Adults it's divided into Two; in others (as in this Subject) it has Three Distinct Bones.

A, The Superior and Largest Bone of the *Sternum*.

B, A *Sinus* which receives the Internal Round End of the *Clavicula*.

C, the Superior Part, or almost Semicircular *Sinus* of the *Sternum*.

D, The Middle Bone of the *Os Pectoris*.

E E E, The *Sinus's* in the Middle Bone of the *Sternum* Laterally; in which the Cartilaginous Extremities of the True Ribs are Receiv'd.

F, The Lower Bone of the *Sternum*; the Extremity of which is commonly Cartilaginous, and call'd *Cartilago Mucronata* or *Ensiformis*; Externally it Frames that Cavity call'd *Scrobiculus Cordis* or Heart-pit, commonly call'd the *Pit of the Stomach*: The Pains of which Part are call'd *Cardialgiæ*, they Affecting the Upper Orifice of the Stomach call'd *Cardia*, where the *Plexus's* of the Upper and Lower Stomach Nerves are made.







THE NINETY-SIXTH TABLE.



REPRESENTS the Bones of the Arms, together with the Two Bones of the Cubit: These, together with those which Compose the Hand Represented in the Following Table, are commonly call'd the Bones of the Whole Hand; but are properly Divided as above. First of the Bone of the Arm, which is properly that Part between the Elbow or Cubit and Shoulder; the Whole Arm comprehends the Bones of the Cubit.

Fig. 1.

A, The Fore-part of the *Os Humeri* of the Right Arm;
B, The Round Head of its Upper *Appendix* Cover'd with a Cartilage, which is Articulated with the *Scapula* by *Arthrodia*.

C, The Circular *Sinus* of the Upper-part of the *Os Humeri*, to which the Ligament Involving the Juncture, together with the Tendons of the *Musculus Supraspinatus*, *Infra-spinatus*, *Teres Minor* and *Subscapularis* are Inserted.

D E, Two Prominencies of the Shoulder-bone.

E, A *Sinus* Fram'd between the Two last Mention'd Prominencies, wherein the External Tendinous Beginning or Head of the *Musculus Biceps* is Receiv'd. *Vid. Tab. 65. I.*

G, A Convex Protuberance of the Lower *Appendix* of the Shoulder-bone, which is Receiv'd in a Shallow Concave Depressure on the Superior Extremity of the *Radius*.

H K, That Part of the *Os Humeri*, that's Articulated to the Upper End of the *Ulna* by *Ginglymus*.

I, The Internal Protuberance of the *Os Humeri*, from which the Greatest Part of the Muscles Bending the Fingers and *Carpus*, together with the *Musculus Pronator Radii Teres* and *Palmaris Longus*, do Arise.

L, An Interstice between the Lower *Appendix* of the *Os Humeri* and its Internal Protuberance.

N, A Large *Foramen* for a Blood-vessel of the Bone.

I was lately Call'd to a Boy about 10 or 12 Years of Age, who Four or Five Days before, in Playing with his Companion, Receiv'd such an Injury in One of his Arms, as he could not afterwards Move it Forewards or Backwards, much less, Lift it up towards his Head; but had all the Actions of his Cubit and Fingers, as we commonly Find in those who have Dislocated the *Os Humeri* from the *Scapula*: After Examining the Shoulder, and Finding no such Dislocation; by Moving the Arm, I Found the Bone near the Shoulder Grate very much, which I Guess could be no otherwise than the Upper *Appendix* of the *Os Humeri* Divided from the Bone. I then Reduc'd it to a Good Figure, and after Applying a Plaister *De Sapone* to Attenuate the Extravasated Blood, I Rol'd it up, and he has Contin'd Easie ever since. The Tingling, as he Told me, he had at his Fingers Ends, and Violent Pain in his Shoulder, Leaving him. I don't Find Authors Mention such like Cases where the Appendages of Bones are Broken off in Young Bodies; but I am Perswaded from other Examples as well as this; such Accidents often Happen, and are not commonly Known by Surgeons.

N. B. These Fractures of Bones at their Appendages in Young Bodies, are sooner United, than when the Middle-parts of Bones are Broken.

Fig. 2.

The Hinder-part of the Left Shoulder-bone.

M, A Cavity, in which the Superior and Back-part of the *Ulna* (Fig. 3, 4. C F), call'd *Olecranon*, is Receiv'd in an Extension of the Cubit.

NNN, The *Foramina* for the Blood-Vessels, which Pass to and from the Marrow, and Internal Parts of the Bone.

Fig. 3.

The *Ulna* or *Os Cubiti* of the Right Arm:

A B, Its Internal Side, next the Trunk of the Body:

C, Its Superior Part or *Olecranon* Articulated with the *Os Humeri*:

D, Its Inferior Part, whose Lateral Smooth Surface is Receiv'd in a *Sinus*, at the Inferior Part of the *Radius* Laterally.

E F, The Semicircular *Sinus* of the *Ulna*, which Receives, and is Receiv'd by the Two Prominencies and *Sinus* of the Lower *Appendix* of the *Os Humeri*, (Fig. 1. K H), which Articulation is call'd *Ginglymus*.

G, The Inferior and Lesser Acute Process of the *Ulna*, call'd *Styloides*.

Fig. 4.

That Side of the Left *Ulna* next the *Radius*.

A, An almost Semicircular *Sinus* of the *Ulna*, in which the Upper Head of the *Radius*, Fig. 5, 6. B B, is Receiv'd Laterally:

B C, Its External Side next the *Radius*; B, its Lower End next the *Carpus*; C, its Superior (call'd *Olecranon*) towards the *Os Humeri*.

D, A Smooth Prominence at the Lower End of the *Ulna*, which is Receiv'd in a *Sinus* of the *Radius*, as above-noted, Fig. 3. D.

E, The Anterior Process of the *Ulna*, which Frames the Semicircular *Sinus*, Articulated with the *Os Humeri*, Fig. 1. K H. This Process is Receiv'd in a *Sinus* at the Inferior and Fore-part of the *Os Humeri*, (Express'd Fig. 1. above K H) when the Cubit is Bended.

F, The Superior and Posterior Process of the *Ulna* in like Manner, Framing its Upper and Semicircular *Sinus*, which Process is Receiv'd in the Cavity (M, Fig. 2.) of the Inferior and Back-part of the *Os Humeri*, in an Extension of the Cubit.

G, Part of the Lesser Sharp Process of the *Ulna*, call'd *Styloides*.

Fig. 5.

The Hinder-part of the *Radius* of the Left Cubit.

A, The Neck of the *Radius*:

B, Its Superior *Appendix*; in whose Upper Concave *Sinus*, (not Express'd in this Figure) Receives the Convex Tubercle of the Inferior *Appendix* of the *Os Humeri*, Fig. 1. G.

C, D, The Inferior Part of the *Radius*, which is Articulated with the Bones of the *Carpus*, Express'd, Tab. 97. Fig. 2.

E, A *Sinus* in the *Radius* Laterally which Receives the Inferior Head of the *Ulna*, Fig. 3, 4. D D.

F, Another *Sinus* on the Inferior Part of the *Radius*, in which the Tendon of the *Musculus Extensor Tertii Internodii Pollicis* and *Indicator*, is Entertain'd. *Vid. Tab. 70. C, N.*

Fig. 6.

The Fore-part of the Right *Radius*:

A, Its Tubercle a little Below its Neck, to which the Round Internal Tendon of the *Musculus Biceps* is Inserted. *Vid. Tab. 65, I.*

B, A Smooth Cartilaginous Outside of the Superior Part or Head of the *Radius*; which is Receiv'd in an almost Semicircular *Sinus* of the Upper End of the *Ulna*, Fig. 4. A, By this Articulation of the *Radius* with the *Ulna*, the Former, *i. e.* the *Radius* is Render'd Capable of Turning on the *Ulna*, like as on an *Axis*, the *Ulna* at that Time Remaining Unmov'd; which Motion of the *Radius* together with the Hand, is Call'd either *Pronation* or *Supination*: *Pronation* is Perform'd when the Palm of the Hand is Turn'd Down and the Back of it is Uppermost; and on the Contrary, when the Palm is Turn'd Up and the Back is Undermost, it's Call'd *Supination*.

C D, The Lower-part of the *Radius* Articulated with the *Ossa Carpi*.

N. B. The *Foramina* of the Blood-Vessels of the Bones are well Express'd in this Table.



T H E NINETY-SEVENTH TABLE.



DEMONSTRATES
the Bones of the Hand
properly so call'd.

Fig. 1.

The Internal Parts of
the Bones of the Hand,
next the Palm.

These are Distinguish'd
into Three Parts; viz.

The *Carpus* or *Brachialis*, (1, 2, 3, 4, &c.) the
Metacarpus or *Postbrachialis* (E E E); and the
Fingers (F G H I); First of the Bones of the *Car-*
pus or Wrist: These are Eight in Number, and
Compos'd of Two Orders or Ranks of Bones;
of which the First Rank is commonly reckon'd
to have Four 1, 2, 3, 4; the Two First of
these Bones jointly Compose a Smooth Convext
Surface, Cover'd with a Cartilage which is re-
ceiv'd in a Shallow *Sinus* at the Inferior Part of the
Radius, Tab. 96. Fig. 5, 6. C D; which Articula-
tion is call'd *Arthrodia*: The Third Bone here
Express'd, do's not Help to Compose the Articula-
tion of either Rank, but is Fasten'd on the Fourth
by a Ligament, which Conjunction is call'd
Syndesmosis; the Use of this Third Bone, is to
Help to Support the Transverse Ligament, under
which the Tendons Bending the Fingers pass:
The Fourth Bone (plac'd between the Second
and Eighth) do's not Compose either Rank, whe-
ther Articulated with the *Radius* or Metacarpal
Bones, but is Inserted between the Two Ranks:
The Fifth Bone here Express'd, is not properly to
be reckon'd among those of the Two Ranks, but
like the Fourth is plac'd between them, and is Ar-
ticulated to the First Bone of the Thumb; which
Articulation may be call'd *Synarthrosis*: The
Sixth Bone here Express'd, ought to be reckon'd
the Seventh, the Sixth not being Express'd in this
Figure, but is Represented in Fig. 2. *: This may
be properly reckon'd the First of the Second
Rank, to whose Lower Part the Metacarpal-
bone of the Fore-Finger is Articulated: The Se-
venth Bone of the *Carpus* (here Sign'd the Sixth
as above Noted) like the preceding, is Articula-
ted with the Metacarpal-bone of the Middle-
Finger, and may be properly Esteem'd the Se-
cond Bone of the Second Rank or Order: The
Eighth Bone of the *Carpus* (here Sign'd Seventh
and Eighth) is the Third and Last Bone of the
Second Rank: The Lower-parts of the Metacar-
pal-bones of the Little and Ring-Fingers, are

Conjoin'd to this Eighth Bone of the *Carpus* by
Synarthrosis: The Upper-parts of the Three
Bones of the Second Rank last Treated of, (not
unlike the Two First of the First Rank) do Con-
junctly Frame a Convext Oblong Smooth Surface
on their Upper-parts, which is receiv'd in a Con-
cave fitted for it, fram'd by the Inferior Parts
of the Two First Bones of the First Rank: This
Articulation made by the Two Ranks of Bones of
the *Carpus*, may also be call'd *Arthrodia*.

A B C D, The Four Bones of the *Metacarpus*,
whose Upper-parts are Articulated to the Sixth,
Seventh and Eighth Bones of the *Carpus* by *Sy-*
narthrosis, and their Inferior Parts with the Bones
of the Fingers, by *Arthrodia*.

E E E, The *Interstitia* of the Metacarpal-
bones, wherein the *Musculi Inter-Ossei* are plac'd;
the Internal Parts of these Bones towards the
Palm are Concave, as Appears in this Figure;
but their External Parts towards the Back of the
Hand are Convext, as is Represented by Fig. 2;
the like may be Observ'd in the Bones of the Fin-
gers and Thumb.

F F F, &c. The First Internodes, or Bones of
the Fingers and Thumb.

G G, The Second Internodes.

H H H, &c. The Third and last Internodes of
the Bones of the Fingers and Thumb.

I I K K, The Articulations of the Bones of the
Fingers with each other, and the Two last Bones
of the Thumb, is by *Ginglymus*; but the Fingers
are Articulated with the Metacarpal-bones by
Arthrodia, as above Noted.

9, 10, 11, The *Ossa Sesamoidea*; of which Ten
are said to belong to each Hand, viz. Two of the
Thumb plac'd on the Inferior and Internal Part
of its First Bone F; the other Eight are in like
Manner plac'd on the Inferior and Internal Parts
of the *Ossa Metacarpi*. In Young Bodies these
Bones are not found, as in Others. They are apt
to be lost in Freeing the Bones, whether by
Boyling or otherwise.

Fig. 2.

The Bones as they Appear on the Back-part of
the Right Hand; for whose Explanation Con-
sult Fig. 1.

Fig. 3.

12, 13, 14, 15, 16, 17, 18, 19, The Bones of
the *Carpus* Separated from each other.



T H E

Fig. 1.

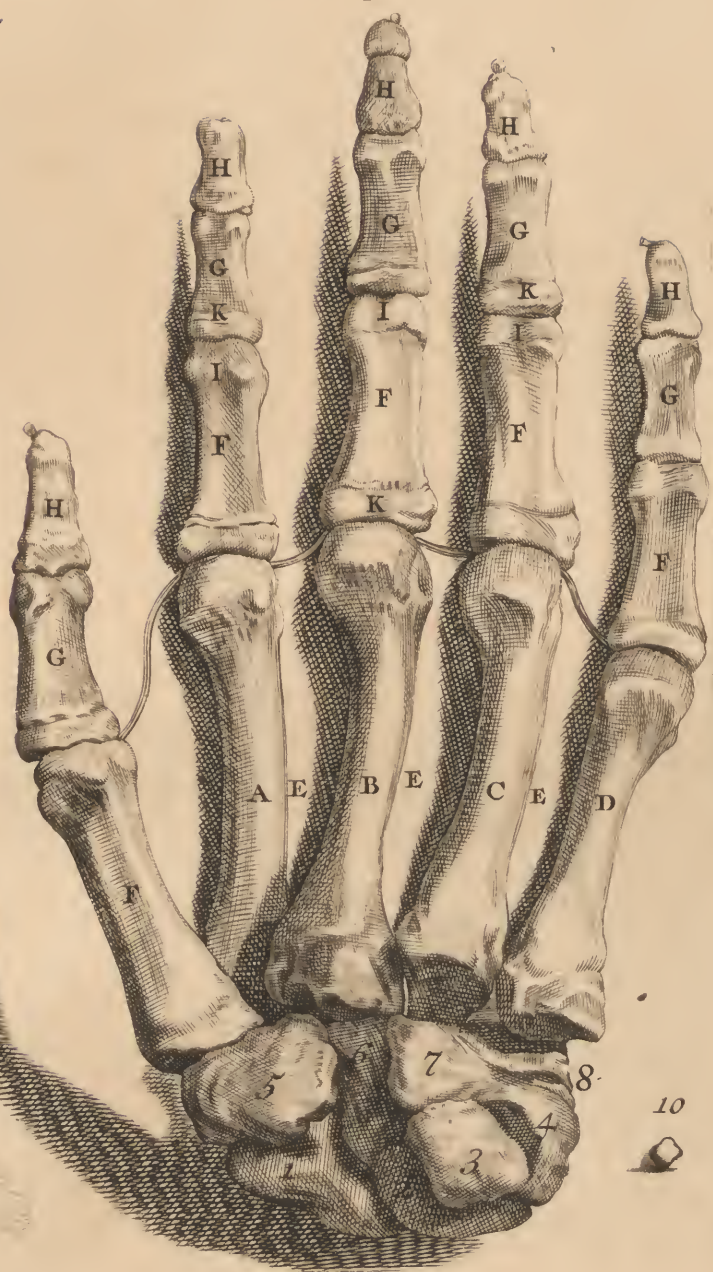


Fig. 2.

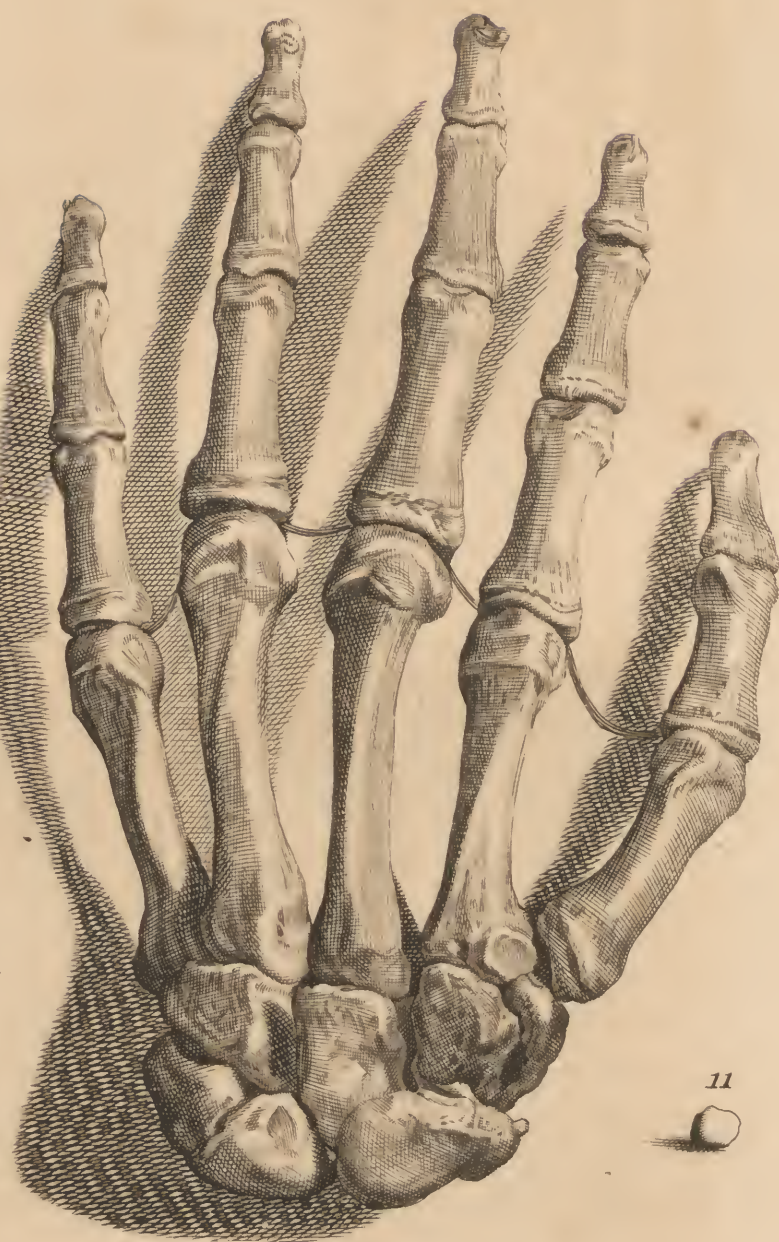


Fig. 3.



Fig. 1.

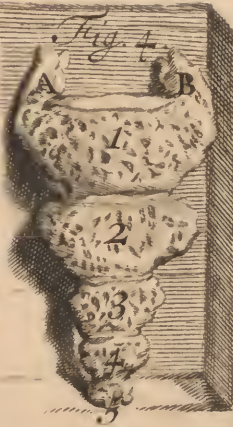


Fig. 2.



T H E NINETY-EIGHTH TABLE.



E come now to the Two Bones which Compose the Lower-part of the *Spina*, namely the *Os Sacrum* and *Coccygis*.

Fig. 1.

The Outside and Back-part of the *Os Sacrum* Compos'd of Four or Five Bones like *Vertebræ* in the *Fœtus*; all which are United in the Adult, and some Marks of their Conjunction only Appear, especially on its Internal Concave Part. *Vid. Fig. 2. D.*

A A A, &c. Some *Vestigia* or Marks of the Conjunctions of the Ascending and Descending Process's of the Five *Vertebræ*, which Compose the *Os Sacrum*.

B B B B, The *Foramina* Fram'd by the last mention'd Transverse Process's, and chiefly fill'd with a Cartilaginous Body; some small Branches of Nerves only passing out of them to the *Musculus Gluteus Maximus*.

C C C, D D, The *Sinus*'s Fram'd on each Side the *Os Sacrum*, by the Meeting of its Transverse Process's.

E, The Superior Surface of the Upper-part of the *Os Sacrum*, on which is plac'd the Last *Vertebra* of the Loins. *Vertebra lumbalis inferior*

F, The *Specus* or Great *Foramen* of the *Sacrum*, being continued from that of the *Vertebræ* of the Back, by which the Nerves that Help to Compose the *Cauda Equina* Descend to their Egreſs, thro' the Internal *Foramina* of this Bone, *Fig. 2. B B B.*

G G, A *Sinus* Fram'd in the Oblique Ascending Process of the First *Vertebra* of the *Os Sacrum*, which receives the Oblique Descending Process of the Last *Vertebra* of the Loins.

H H, Those Parts of the *Sacrum* join'd to the *Ossa Ilii* by the Interposition of a Cartilage; which Conjunction is call'd *Syncondroſis*.

I I, The Spines of the *Sacrum*.

k k, Two Process's of the *Sacrum*, Connected to the Two Process's of the *Os Coccygis*, *Fig. 3. A, B.*

Sacrum Coccygis

Fig. 2.

The Inside or Fore-part of the *Os Sacrum*.

A A A, The Smooth Inside of the Five *Vertebræ* which Compose the *Os Sacrum*.

B B B, The *Foramina* by which the Nerves pass out from its *Specus*.

C C, D D, The partly Cartilaginous and partly Bony Connection of the *Vertebræ* of the *Sacrum*.

E, The Inferior Part of the *Sacrum* join'd to the Upper-part of the *Os Coccygis*.

Fig. 3.

The Back-part of the *Os Coccygis*, Compos'd of Five Bones join'd to each other by *Syncondroſis*.

A, B, Two Ascending Process's of the *Os Coccygis*, join'd to those of the *Sacrum*, *Fig. 1. k k.*

1, 2, 3, 4, 5, The several Bones which Frame the *Os Coccygis*.

Fig. 4.

The Internal Part of the *Os Coccygis*, whose Characters are Explain'd in the preceding Figure.



T H E NINETY-NINTH TABLE.

Fig. 1.



THE Internal Concave Surface of the *Os Innominatum*, which in the *Fœtus* is Manifestly Compos'd of Three Bones; but become so United in the Adult, as that no Marks of their Cartilaginous Conjunction do's than Appear. This Bone is by some call'd *Ilium*, *Os Coxendicis*, and *Os Anchæ*, and sometimes *Lumbare*: For the better Description of it, *Anatomists* have given distinct Names to the several Parts of it, which Appear in the *Fœtus*, as follow.

ABCD, That Part of the *Os Innominatum*, call'd *Ilium*:

AAA, The Internal Concave Part of it, in which the *Musculus Iliacus Internus* is plac'd, call'd *Costa Ilii*:

B, The Spine of the *Ilium*:

C, The *Foramina* of the Blood-Vessels which pass into its *Meditullium* or Internal Part.

D, That Part of the *Os Ilium* join'd to the *Sacrum* by a Cartilaginous Interposition, which Conjunction is call'd *Syncondrosis*.

E, That Part of the *Os Innominatum*, call'd *Os Pubis* or *Pectinis*.

F, The Great *Foramen* of the *Os Ischium*, Compos'd by that Bone in Conjunction with the *Os Pubis*.

G, The Fore-part of the *Os Pubis*.

H, The Third Part of the *Os Innominatum*, call'd *Os Ischium* and *Os Coxendicis*.

I, A Prominence of the *Os Ilium*, whence the *Musculus Rectus Femoris* do's Arise: *Vid. Tab. 75. G.*

Fig. 2.

The External Convext Surface of the *Os Innominatum*:

ABB, Its Cavity, wherein the Head of the *Os Femoris* is receiv'd, call'd *Acetabulum* and *Pixis*.

A, A *Sinus* Excavated in the Inferior Part of the *Acetabulum*, in which the Mucilaginous Gland is plac'd: *Vid. Tab. 74. 1.*

The *Ligamentum Rotundum* Figur'd *Tab. 74. k*, Arises from the Lower-part of the *Acetabulum* towards its External Margin; whence it passes Upwards to its Termination in the Head of the *Os Femoris*; which Disposition of that Ligament, is no small Artifice in Nature, in preventing too great a Coalition of the Superior Part of the *Acetabulum* with the Head of the Thigh-bone, in Walking, Running, &c. as before Noted.

BB, The External Margin of the *Acetabulum*, whence the *Ligamentum Latum* do's Arise; which Ligament is Implanted in the Neck of the *Os Femoris*.

CDE, The *Dorsum Ilii*.

D Superior, The *Spina Ilii*.

EE, Divers Processes towards the Back-part of the *Ilium*, where its other Side, Express'd in the Former Figure D, is join'd with the *Sacrum*.

F, A *Sinus* of the *Os Ilium*, in which the *Musculus Pyriformis* passes towards its Implantation.

G, An Acute Process of the *Ischium*.

H, An *Appendix* of the *Ischium*, to which a Ligament Arising from the *Os Sacrum* is Fasten'd: From this *Appendix* the *Musculus Quadratus Femoris*, and the Muscles Bending the *Tibia*, do Arise.

I, That Part where the *Os Ischium* joins with the *Os Pubis*.

K, The *Os Pubis* or *Pectinis*.

L, The Great *Foramen* of the *Ischium* and *Pubis*.

N. B. The Three Bones which Compose the *Os Innominatum*, all meet and join in the *Acetabulum*.



Fig. 1.



Fig. 2.



THE DEEDS OF FAITH

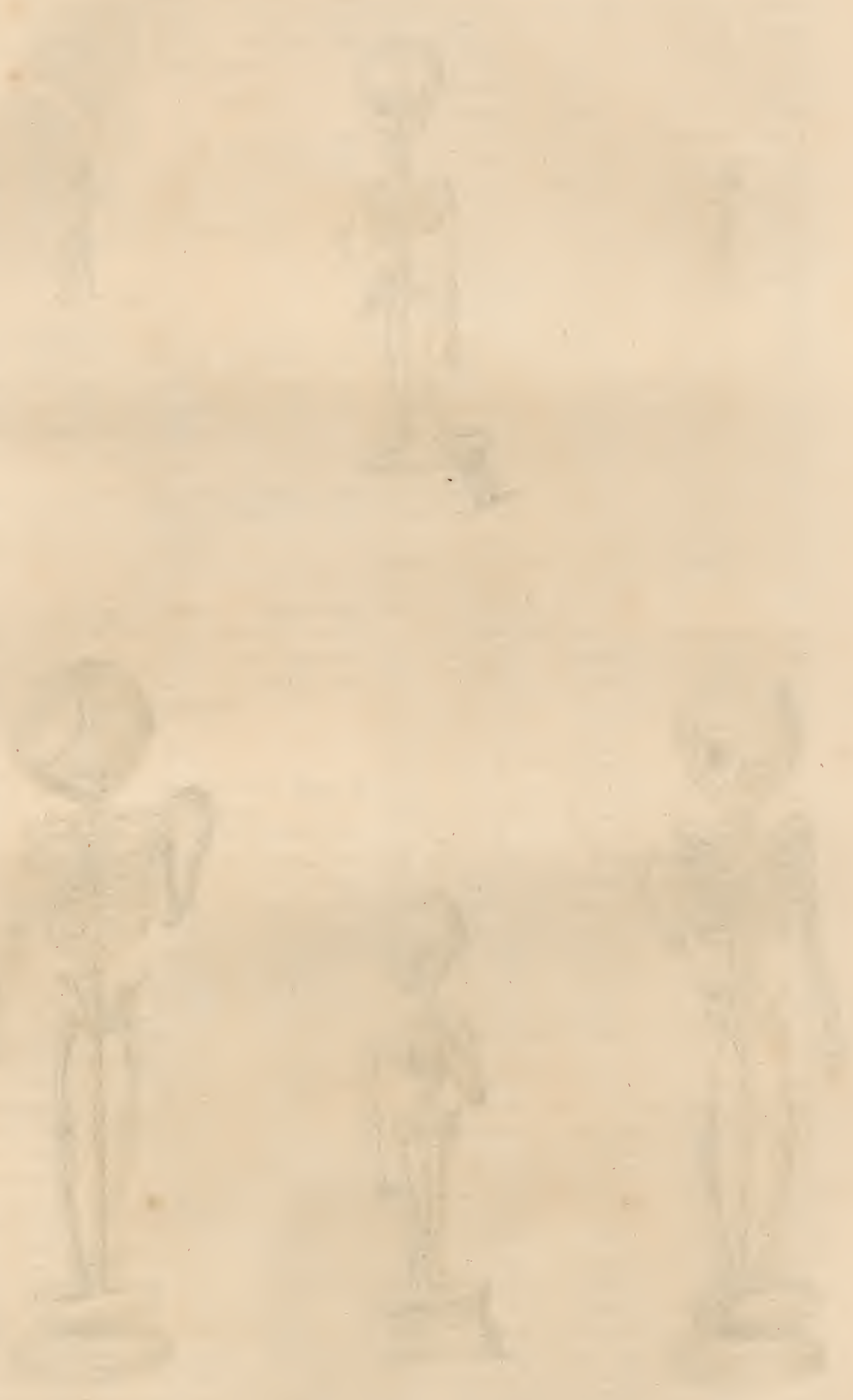


Fig. 1.



Fig. 3.

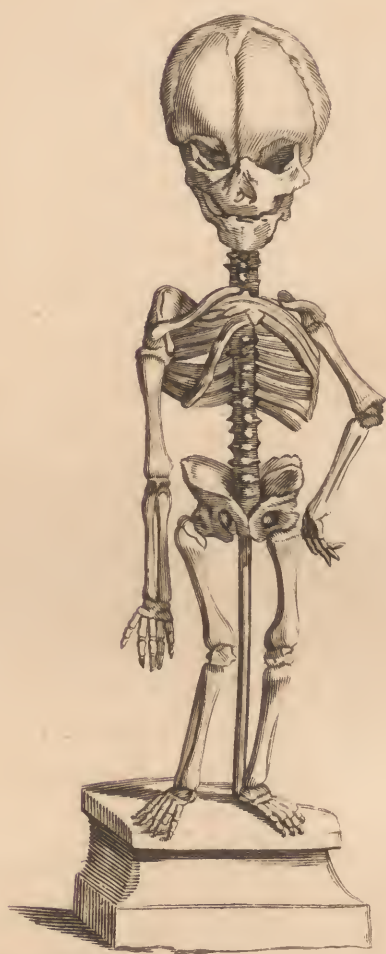


Fig. 2.



Fig. 5.

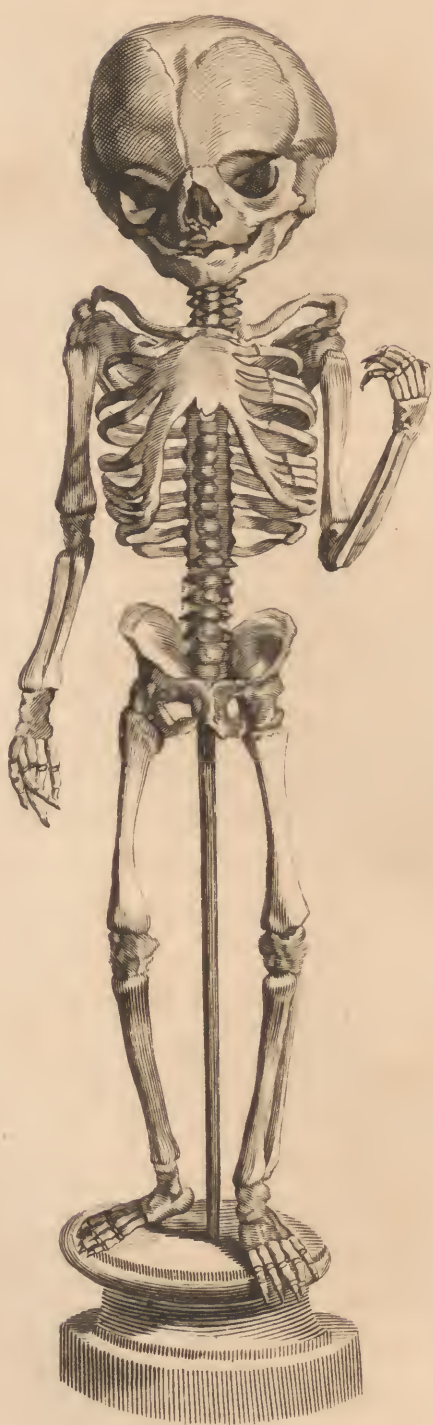


Fig. 4.

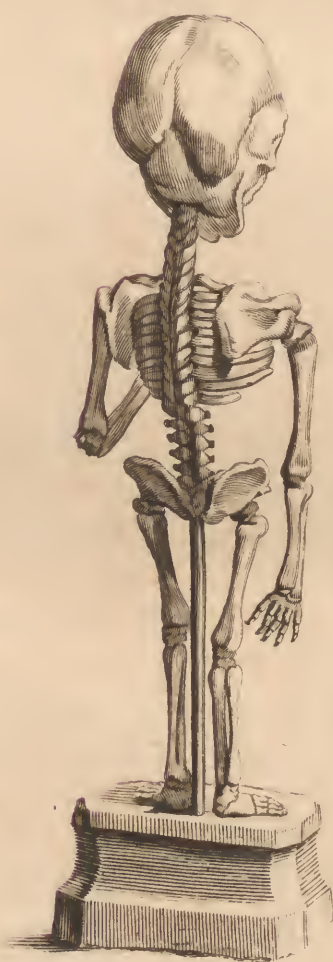


Fig. 6.



T H E HUNDREDTH TABLE.



HEWS the Bones of the *Fœtus* of one Month to Seven Months after Conception.

Fig. 1.

A Skeleton of a *Fœtus* about a Month after Conception; in which the Cartilaginous Rudiments of Bones have divers little Bony Specks or Ossifications in the Arms and Legs.

Fig. 2.

The Skeleton of a *Fœtus* of Six Weeks, in which the Rudiments of the Bones of the *Artus* or Limbs do Appear in Bony Specks, somewhat Larger than those of the preceding Figure; the *Claviculæ* being Intirely Bony.

Fig. 3, 4.

The Fore and Back-part of the Skeleton of a *Fœtus* of about Three Months; in which the Beginnings of all the Bones Appear.

Fig. 5.

The Skeleton of a *Fœtus* of about Four Months; in which the Bones with their Cartilaginous Appendages do Appear, without any considerable Difference (except in Magnitude) from those in the Two preceding Figures.

Fig. 6.

The Back-part of the Skeleton of a *Fœtus* of about Four Months after Conception.

In the *Embryo*, or First Rudiments of the *Fœtus* within the Womb; those Parts which afterwards become Bones, are than Intirely Cartilaginous, till about the End of the First Month after Impregnation; at which Time divers Bony Specks or Ossifications begin to Appear about the Middle of the Larger Bones of the Limbs, especially in the *Claviculæ*. Two Months after Conception, the Whole Head do's not afford any Bony Appearance, except the Third Pair of Bones of the Upper Jaw, and the Two Bones which Frame the Lower Jaw, which about this Time Appear Distinct. The Middle-parts of the *Claviculæ* are Bony after the First Six Weeks. The Shoulder-blades are without any Proper Figure about the Second Month after Conception, at which Time their Ossifications begin in their Middle-parts: About the Third Month their Spinal Process's begin to be Bony, as well as their Coracoidal and Short Process's: Near this Time the Whole Spine, or *Vertebræ* of the Neck, Back, Loins, *Os Sacrum* and *Coccygis*, begin to be Bony. The Sixth *Vertebra* of the Back Internally, some Bony Specks in each *Vertebra* Appear, and Gradually Lessen themselves to the Fifth *Vertebra* of the Neck; the like Ossifications may be Observ'd to become Less and Less in each *Vertebra*, towards the Lower-part of the Spine, to the Third *Vertebra* of the *Os Sacrum*. The Incurvation or Bending Forwards of the Whole Spine at this Time, is Remarkable. The Four Upper *Vertebræ* of the Neck, afford some Bony Appearances Laterally, about the

Third Month; near which Time the Bodies of the Three Upper *Vertebræ* of the *Os Sacrum*, seem to Frame One Bone, but its Lateral Parts are not Bony till the Fourth Month; at which Time the Bodies of the Third and Fourth *Vertebræ* of the Neck begin to Appear. The Fifth and Sixth Month, the *Epistropheus* or Second *Vertebra* of the Neck has a Bony Speck; but its Tooth-like Process is yet Cartilaginous: The Fore-part of the *Atlas* or First *Vertebra* is yet wanting. The *Os Coccygis* is Cartilaginous till about the Eighth or Ninth Month; at which Time, in its Internal Part, call'd its Body, Two Osseous Specks Appear about the Bigness of Two great Pin's Heads. All the *Vertebræ* of the Spine of the *Fœtus* (at this Time) Appear Compos'd of Three Bones; First that of the Bodies of the *Vertebræ* Forwards; Secondly its Two Lateral Parts which Frame their Transverse Process's: Their Spinal Process's not Appearing Bony till some Time after the *Partus*; whence (as *Spigelius* Observes) Rope-Dancers, Tumblers, &c. by early Practice whilst they are Children, the Spines of the Back-bone give way to the Inflection of their *Vertebræ* Backwards; the common Position of the Spines being Obliquely Descending, they do thereby incline more Horizontal, and their Points are also rendered more Obtuse.

The *Os Innominatum* about the Second Month after Conception is Cartilaginous, except that Part of it call'd *Ilium*, where it Frames the Upper-part of the *Acetabulum*, it has a Bony Speck about the Bigness of a Common Pin's Head. In the Fourth Month the *Os Coxendicis* or *Iscium*, (another Part of the *Os Innominatum*) has a Bony Appearance, where it meets the *Ilium* within the *Acetabulum*, not exceeding the Head of a common Pin in Magnitude; the like may be Observ'd of the *Os Pubis* within the *Acetabulum*: These Three Bones which Compose the *Innominatum*, remain Distinguish'd in the *Fœtus* by a Cartilaginous Interposition, which continues till the Seventh Year, at which Age those Cartilaginous Marks Disappear. In the Second Month all the Ribs except the First and Last, are so harden'd, that the Channels (Express'd Fig. 4. Tab. 94. E.) or *Sinus's* for the Intercostal Blood-Vessels and Nerves, Appear.

The Time of the Ossification of the *Sternum* is uncertain; but *Eustachius* is mistaken in saying, It's altogether Cartilaginous in Children Newly Born. *Kerckringius* affirms he never Dissected a *Fœtus* of Four Months, but he found some Little Bony-Bodies in the *Sternum*. Their Number and Figure Varying in most Subjects, we need not say more of them in this place. The Ossification of the *Artus* is very Early, as Appear by the First and Second Figures of this Table, where the Middle-parts of the Bones First Appear in little White Specks a Month after Conception, as above Noted; but some of their Appendages are Intirely Cartilaginous for some Months after the Birth. The Eight Cartilages of the *Carpus* become Bony some Time after the Birth. The Appendages of the Bones of the *Metacarpus* and Fingers, continue Intirely Cartilaginous some Months after the Birth; the like may be Observ'd of the Feet and Toes; the *Patellæ* in like Manner are Intirely Cartilaginous some Months after the Birth.

T H E HUNDRED & FIRST TABLE.



REPRESENTS the Fore-parts of the Bones of a *Fœtus* of Nine Months.

A, The *Fronticulus* fram'd at the Meeting of the Bones of the *Sinciput* and Frontal Bones, it being a Discontinuation of those Bones in the *Fœtus*; which continues in the Infant for Divers Months, and sometimes Years.

BB, The Two Frontal-bones.

CC, Parts of the *Bregma* or Sincipital-bones.

DD, The Sagittal Suture Extended to the Upper-part of the Nose.

EE, The Coronal Suture; they are call'd Sutures in Respect of their Appearance in the Adult, but here in the *Fœtus* they rather seem to Deserve the Term *Harmonia*; they Approaching to simple Lines, and are not

Indented till the Bones become Hard; but since a Membrane Interposes, *Spigelius* call's this Conjunction in Infants *Synymenesis*.

F, The Cartilage of the Nose cut off;

G, Its *Septum*.

HH, The Upper-jaw, or properly the Fourth Bone of the Upper Jaw.

II, The Two Bones which Compose the Lower Jaw;

K, Their Suture, or more properly their Conjunction by *Synchondrosis*.

LL, The External or Stony Parts of the Teeth, yet lying within their *Alveoli* or Sockets, and Cover'd with the *Periostium* of the Jaw-bone: The Time of their Breaking forth is uncertain, and the Order they Appear in, is commonly well known; yet in this too they sometimes vary, and the *Dentes Canini* Appear before the *Incisores*; if their Eruption is Tedious, the Gums thro' frequent Use are so harden'd, as to Occasion ill Symptoms; in which Case not only the Gums, but the *Periostium*, which at that Time immediately Cover's the Upper-parts of the Sockets, is to be Divided by a Sharp Instrument; whereby the Imprison'd Tooth is set at Liberty, and the Tension of the *Periostium* Reliev'd. In Practising this Operation, we ought to have Regard to the Time of the Eruption of those Teeth we cut upon; for those only ought to have their Gums and *Periostium* Divided, which Appear somewhat Prominent: By too early Dividing of those Parts they Unite again, and their *Cicatrice* Render's them more Obstinate to the Eruption afterwards, especially if the *Periostium* its self was not Divided before.

M, The Left Clavicle.

N, The Internal Part of the Right *Scapula*.

O, The *Acromion* of the *Scapula* join'd with the Extremity of the Clavicle.

P, The Cartilaginous *Appendix* of the *Os Humeri*.

Q, The *Os Humeri*.

RR, The *Ulnæ*.

SS, The *Radii*.

TT, The Cartilages which Compose the Bones of the *Carpus* on both Sides.

VV, The *Ossa Metacarpi*, whose Extremities are Cartilaginous.

WW, The Bones of the Fingers, whose Knuckles or Appendages are Cartilaginous.

X, The *Vertebræ* of the Neck;

Y, Those of the Back;

Z, Those of the Loins.

1, The *Os Sacrum*.

2, The *Coccygis*.

3, The *Ilium*.

4, *Ischium*.

5, *Pubis*.

6, 6, The *Sternum* with Divers little Bony Bodies.

7, 7, The True-ribs.

8, 8, &c. The Bastard-ribs.

9, The Ensiiform Cartilage of the *Sternum*.

10, The Thigh-bone;

11, Its *Trochanter Major* yet Cartilaginous.

12, The *Trochanter Minor* in like manner Cartilaginous.

13, The Cartilage which makes the *Patella*.

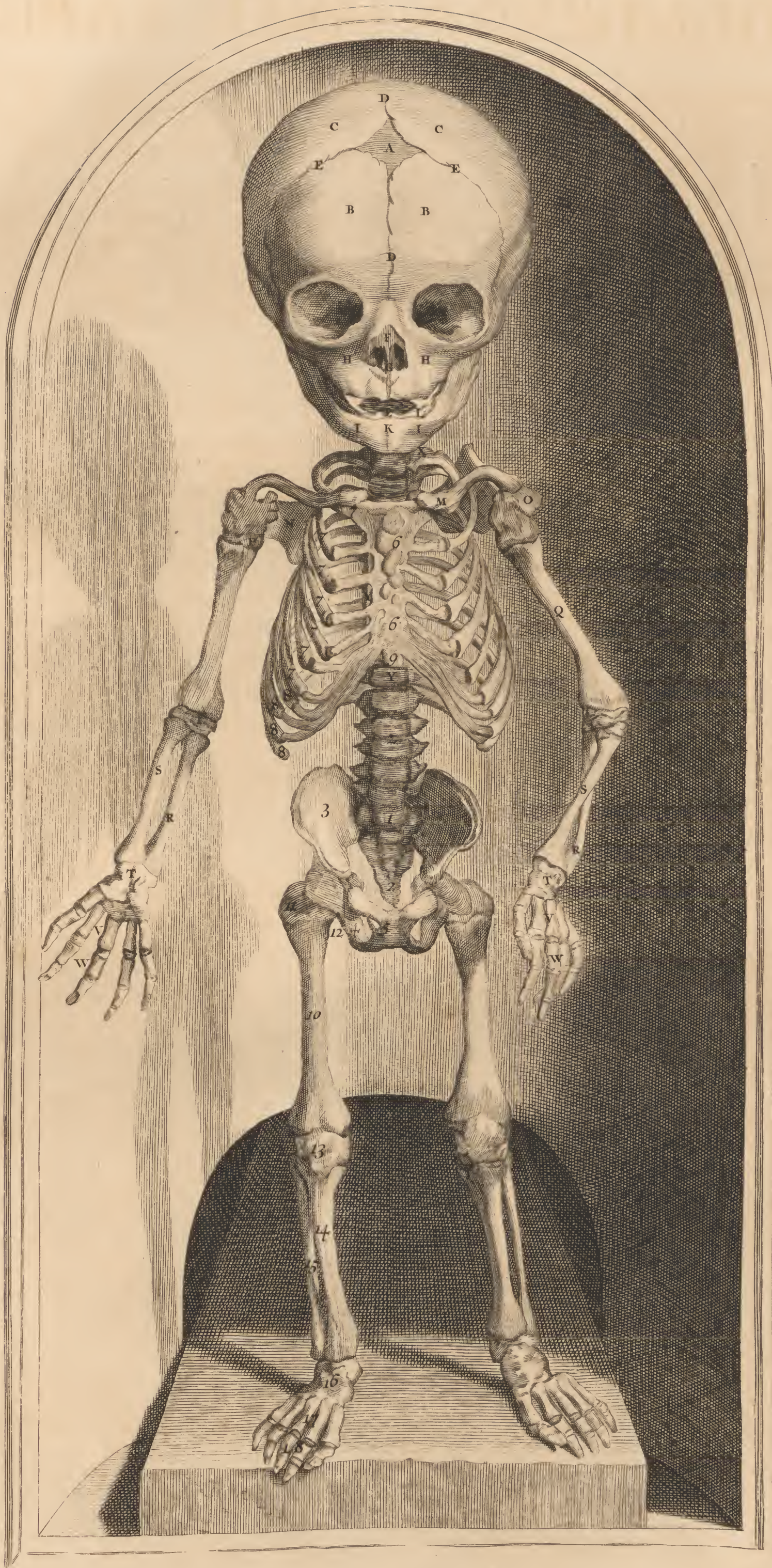
14, The *Tibia*.

15, The *Os Suræ* or *Fibula*.

16, The Cartilages which make the Bones of the *Tarsus*.

17, The *Ossa Metatarsi*.

18, The Bones of the Toes, which are Cartilaginous at their Extremities, like those of the Fingers.







T H E HUNDRED & SECOND TABLE.



S the Back-part of the Skeleton of a *Fœtus* of Nine Months.

A, Part of the Sagittal Suture.

BB, The *Ossa Bregmatis*.

CC, The *Sutura Lambdoides*.

D, The *Os Occipitis* which commonly in the *Fœtus* is Divided into Four Bones; Three of which Appear in this Figure; the Fourth lying between the *Ossa Petrosa*, and is join'd to the *Os Sphenoides*, Tab. 92. Fig. 2. P.

E, The *Os Temporum* or *Squamosum* not yet join'd with that Part or Process of it, call'd *Petrosum*.

FF, The Lower Jaw.

G, The *Os Jugale*.

HH, &c. The Seven *Vertebræ* of the Neck,

II, &c. Twelve of the *Thorax*,

KK, &c. Five of the Loins, without their Spinal Process's.

L, The Right *Scapula*.

M, Part of the Right *Clavicula*.

NN, &c. The True Ribs.

OO, &c. The Bastard Ribs.

P, The *Os Humeri*.

Q, The *Ulna*.

R, The *Radius*.

S, The Cartilages which Compose the Bones of the *Carpus*.

T, The Bones of the *Metacarpus*.

V, The Bones of the Fingers.

W, The *Os Sacrum*;

X, The *Ilium*,

Y, The *Ischium*,

Z, The *Pubis*,

1, The Thigh-bone.

2, The Cartilaginous Appendages of the Lower-part of the Thigh-bone, and Upper-parts of the *Tibia* and *Fibula*.

3, The *Tibia*,

4, The *Fibula*.

5, The Cartilages which Frame the Bones of the *Tarsus*.

6, The Bones of the *Metatarsus*.

7, The Bones of the Toes.

N. B. There are divers Remarkable Parts of this Figure, as well as of the preceding Table, which have escap'd Lettering: As the Spines of the *Scapulæ*, Cartilaginous Appendages of the *Ossa Humeri*, *Ulnæ*, *Radii*, *Femoris*, *Tibiæ*, *Fibulæ*, &c. but most of these being already Letter'd on other Figures of the Bones, we shall Omit their Repe-tition on these, since the Additional Letters already made with a Pen on these Figures, are so Numerous.



T H E

HUNDRED & THIRD TABLE.



THE Bones of the Inferior *Artus* or Limbs are Divided into the Thigh, Shank, and Foot.

Fig. 1.

The Fore-part of the Left Thigh-bone.

A, The Upper *Appendix* of the Thigh-bone, call'd its Head, cover'd with a Cartilage, which is receiv'd in the *Acetabulum* of the *Os Innominatum*, Tab. 99. Fig. 2. A B B.

The Round Ligament Arising from the Inferior Part of the *Acetabulum*, is Inserted near the Middle of this Head of the Thigh-bone, Fig. 2. B. This Articulation of the Thigh-bone with the Hip-bone, is call'd *Enarthrosis*.

B, The *Trochanter Major*, which in Young Bodies Appears join'd with a Cartilage to the Thigh-bone, and is therefore call'd an *Epiphysis* or *Appendix*.

C, The *Cervix* or Neck of the *Os Femoris*, to which the *Ligamentum Latum* is Fasten'd.

D E, The Inferior *Appendix* of the *Os Femoris*, Framing Two Heads : The Smooth Cartilaginous Surface which Appears between them, receives the Internal Surface of the *Patella*, Fig. 4.

F, A *Sinus* whence the *Musculus Popliteus* has its Tendinous Origin.

Fig. 2.

The Posterior Part of the Right Thigh-bone.

A, Its Head.

B, A little Depressure, where the *Ligamentum Rotundum* is Implanted.

C, The Lesser *Trochanter*, to which the *Musculus Psoas* and *Iliacus Internus*, are Inserted.

D E, The Two Inferior Heads of the Thigh-bone, which are receiv'd in Two Shallow Depressures, Fram'd by Two Semilunary Cartilages, plac'd on the Superior Part of the *Tibia* : The *Sinus* between these Two Heads, receives a small Prominence on the Upper-part of the *Tibia*, especially in its Flexion : This Articulation of the Thigh with the *Tibia*, is by *Gynglimus*.

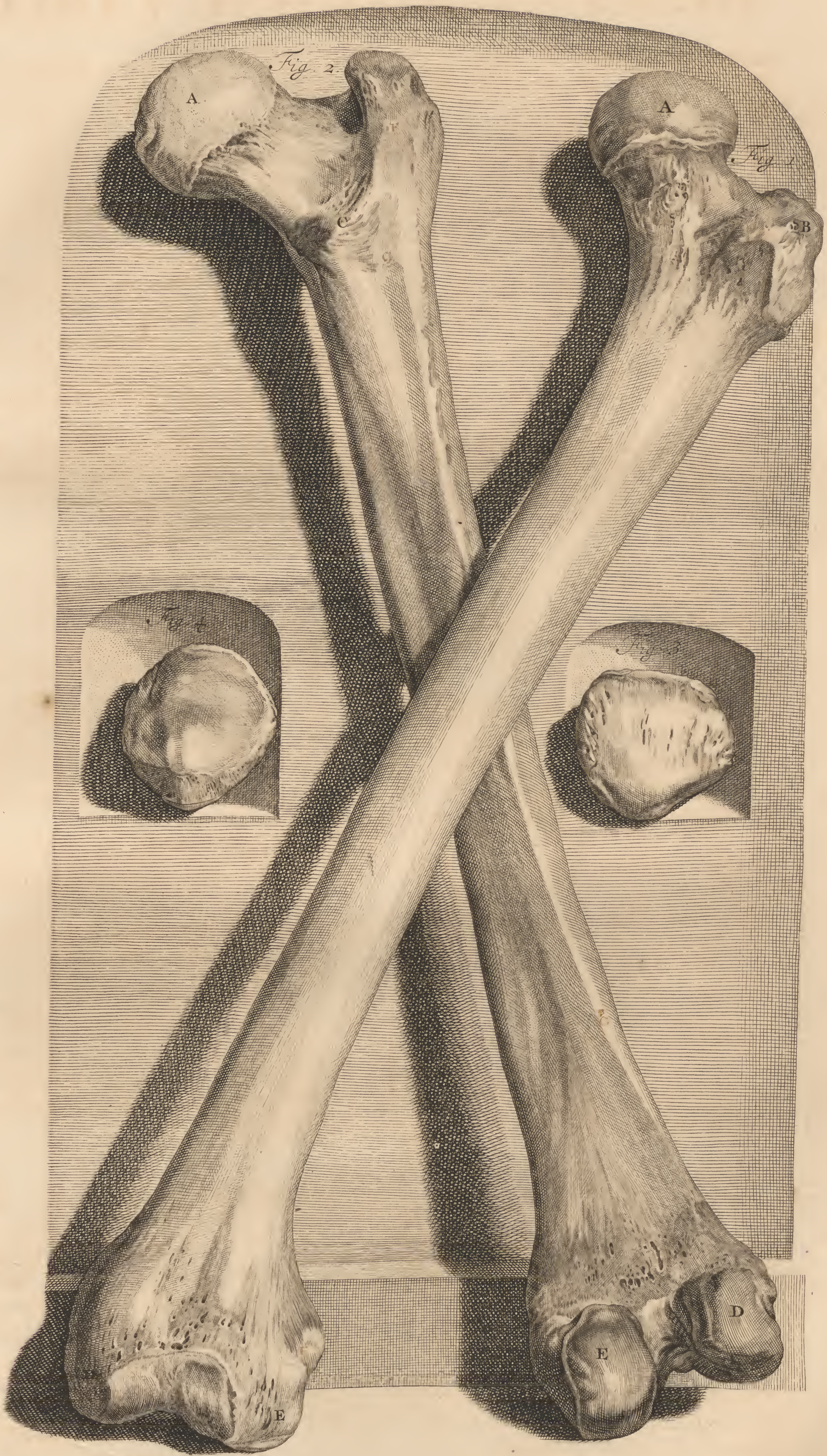
F, The Great *Trochanter*, where the *Musculus Pyriformis*, *Marsupialis*, *Obturator Externus*, and Parts of the *Glutæi Medii*, *Minimi*, and *Quadratus Femoris*, are Inserted.

G G, The *Linea Aspera*, to which Part of the *Musculus Quadratus Femoris*, *Glutæus Maximus*, and the Greatest Part of the *Triceps* are Inserted : The *Vastus Externus* and *Internus*, do chiefly Arise from the *Linea Aspera*.

In some Bodies, especially Aged, we find Two *Ossa Sesamoidea* on the Superior Parts of the Two Lower Heads of the Thigh-bone D E : The Office of which, is to Defend the Bending Tendons of the *Tibia* from too great a Collision on those Heads of the Bone, which they would else be Subject to : The like Ossification I have more than once Observ'd in the Tendon of the *Peroneus Longus*, at its Contortion over the *Os Calcis* towards the Bottom of the Foot.

Fig. 3, 4.

The Former Figure Represents the External Rough Part of the *Patella* ; the Latter the Internal Smooth Surface of the same Bone cover'd with a Cartilage ; which is applied to the Fore-part of the Junction of the *Os Femoris* with the *Tibia*, where it's Fasten'd by the Tendon of all the Extending Muscles of the *Tibia* ; wherefore by *Spigelius* its Conjunction is call'd *Syntenosis*. The Use of the *Patella* (by some call'd *Rotula*, *Mola*, *Scutum*, *Os Scutiforme*, &c.) is to prevent the Thigh-bone from Thrusting out Forwards, especially in Walking down any Steep Place, and from Pressing on the Tendons of the Extending Muscles of the *Tibia* : It also Defends the Articulation of the Thigh and *Tibia*, especially in Kneeling ; and like a Pulley Acts on the Lower-part of the *Os Femoris*, to Extend the *Tibia* when Inflected.





T H E HUNDRED & FOURTH TABLE.

Fig. 1.



HE W S the Fore-part of the Right *Tibia*, or *Major Focile* of the Leg.

A A, The sharp Edge on the Fore-part of the *Tibia*, call'd its *Spina*.

A *Superior*, A Prominence on the Upper-part of the *Tibia*, to which the Great Tendon of the Muscles, Extending the Leg, is Inserted.

B, A Process in the Middle of the Upper *Appendix* of the *Tibia*, to which a Ligament is Inserted, proceeding from the Hollow or *Sinus*, between the Heads of the Lower-part of the Thigh-bone, Express'd Fig. 2. in the preceding Table.

C, The *Malleolus Internus*, Fram'd by the Lower *Appendix* of the *Tibia*.

Fig. 2.

The Back-part of the Left *Tibia*.

A A, That Part of the *Tibia* whence the *Musculus Perforans*, or *Flexor Tertii Internodii Digitorum Pedis*, do's Arise,

B, A Prominence in its Upper *Appendix*, to which a Ligament is Fasten'd, continued from the *Sinus* between the Two Heads of the Lower *Appendix* of the *Os Femoris*.

C, A *Sinus* in the Lower-part of the *Tibia* and its *Appendix*, in which the Inferior Part of the *Fibula* is receiv'd.

D, Another Small *Sinus* in the Lower-part of the *Tibia*, wherein the Tendon of the *Musculus Tibialis Posticus* passes towards its Insertion.

E, A Prominence receiv'd in a Shallow Depressure of the Upper-part of the *Fibula*.

F, The *Malleolus Internus*.

Fig. 3.

The Back-part of the Left *Fibula* with its Lower End Uppermost, it's also call'd *Os Suræ*, *Canna Minor*, *Focile Minus*, and *Os Peronæ*.

A A, The External Part of the *Fibula*.

BB, Its Edge, whence the *Musculus Peronæus Longus* do's Arise.

CC, The Two Extrems of the Bone, properly so call'd.

D, Its Lower *Appendix* which makes the *Malleolus Externus*.

E, Its Upper *Appendix*.

F, That Part of the *Fibula*, whence the Upper-part of the *Musculus Flexor Pollicis Longus*, do's Arise.

Fig. 3.*

A B C, &c. The Internal Part of the Right *Fibula* next the *Tibia*, with its Lower End Uppermost, as in the Former Figure.

D, A Smooth Cartilaginous Surface of the Lower *Appendix* of the *Fibula*, which is Entertain'd in the *Sinus* of the Lower-part of the *Tibia*, Fig. 2. C; and Touches the *Os Calcis* Externally Laterally. *Vid. Tab. 105. Fig. 1. A.*

E, A Shallow Depressure on the Superior *Appendix* of the *Fibula*, which receives the Prominence of the *Tibia*, Fig. 2. E.

F, The Superior Part of the Bone next its *Appendix*.



T H E HUNDRED & FIFTH TABLE.



E come now to the Bones of the Foot it self : These like those of the Hand are Divided into Three Parts, *viz.* The Bones of the *Tarsus*, *Metatarsus*, and those of the Toes. The *Tarsus* is Compos'd of Seven Bones, which in this Table are Represented Separated from each other ; the

- 1, Is the *Astragalus* or *Talus*, by some call'd *Os Balistæ* ;
- 2, The *Os Calcis*, *Calcanens* or *Pedis Calcar* ;
- 3, The *Os Spongiosum*, call'd *Cuboides*, *Os Tesseræ*, *Grandinosum* and *Polymorphon* ;
- 4, 5, 6, The Three *Offa Cuneiformia* ;
- 7, The *Os Naviculare* or *Cymbiforme* ; it's also call'd *Scaphoeides*.

Fig. 1.

The Upper-part of the Bones of the Right Foot, when join'd to each other with Wires in their Natural Situation.

A B, The *Os Calcis* : A, Its External Lateral Smooth Side, Cover'd with a Cartilage which touches the Internal and Lower-part of the Inferior *Appendix* of the *Fibula*, call'd *Malleolus Externus* : B, The Upper-part of the *Os Calcis*, Cover'd with a Cartilage which is receiv'd in a *Sinus* of the Lower *Appendix* of the *Tibia*.

C, The *Os Calcis*.

D, The *Os Naviculare*.

E, The *Os Spongiosum* or *Cuboides*.

F G H, The Three *Offa Cuneiformia*.

I K L M N, The Five *Offa Metatarsi* or Second Division of the Foot.

1, 2, 3, &c. to 13, All the Bones of the Toes according to *Bidloo*, but we suspect the Second Bone of all the Lesser Toes was wanting in the Subject, by which this Figure was Delineated ; for I am perswaded the *Painter* follow'd the Life very strictly, as appears by the Figure.

Fig. 2.

The Bones of the Inferior Part or Bottom of the Right Foot.

A B, Part of the *Astragalus*.

C, The *Os Calcis*.

D, The *Os Naviculare*.

E, The *Os Spongiosum* or *Cuboides*.

G H, Two of the *Offa Cuneiformia*.

I K L M N, The *Offa Metatarsi*.

O O, The *Offa Sesamoidea* of the Great Toe.

N. B. The Bones of the Toes (as Express'd in the Former Figure) wanting their Second Internodes.

Fig. 3.

One of the Nails.

A, The Upper-part of the Nail, commonly call'd its Root.

B, Its Side, which was Border'd with a Protension of the *Cuticula*.

C, Its External Convex Part, where its *Series* of Fibres Appear Extended according to its Length, from A to C.

D, Its *Limbus* or Extrean Part, which Projects over the Top of the Finger or Toe.

The Nails Arise from their Subjacent Parts, call'd their Roots, Fram'd of a Complication of Nerves and Blood-Vessels ; whence Horny Fibres or Tubes Arise, and being United, Compose that Hard Body call'd the Nail. The Horny Fibres which make the Outside or Convex Surface of the Nail, Arise from the Lower-part of its Root next the Second Internode of the Finger ; the rest of the Horny Fibres which Arise from the Superior Part of its Root towards the Top of the Finger ; successively make the Internal Concave Surface of the Nail : So that the Extremity of the Nail which Extends it self beyond the Top of the Finger, is Fram'd of all the Fibres which Arise from the Surface of its Root, and is much Thicker than its other Extrean towards its Root : Hence it happens that the External Surface towards the Root of the Nail is Protruded Forwards towards its Top ; as may be Observ'd if you Mark the Lower-part of the Nail towards its Root, you will see it advance to the Top ; which at Length is either Worn away or cut off. When any Corosive Matter (as in a *Paronychia* or the like) destroys the Tender Roots of the Horny Fibres, the Nail necessarily falls off ; but nevertheless it will Bud again, and a New Nail will Grow in its place ; which commonly do's not prove so Beautiful as the Former, whether occasion'd by too early Using it, or its being Expos'd to the External Air, or some inconvenient Covering made Use of, to Defend it from Outward Injuries.

Fig. 1.



Fig. 2.



Fig. 3.



A N
APPENDIX,

Representing the
EXTERNAL MUSCLES,
And Divers P A R T S

O F
H U M A N E B O D I E S

Which are either Omitted, or not well Exprest in the Preceding

T A B L E S.

Done after the L I F E.

AN

APPENDIX

Illustrations

EXTERNAL MUSCLES

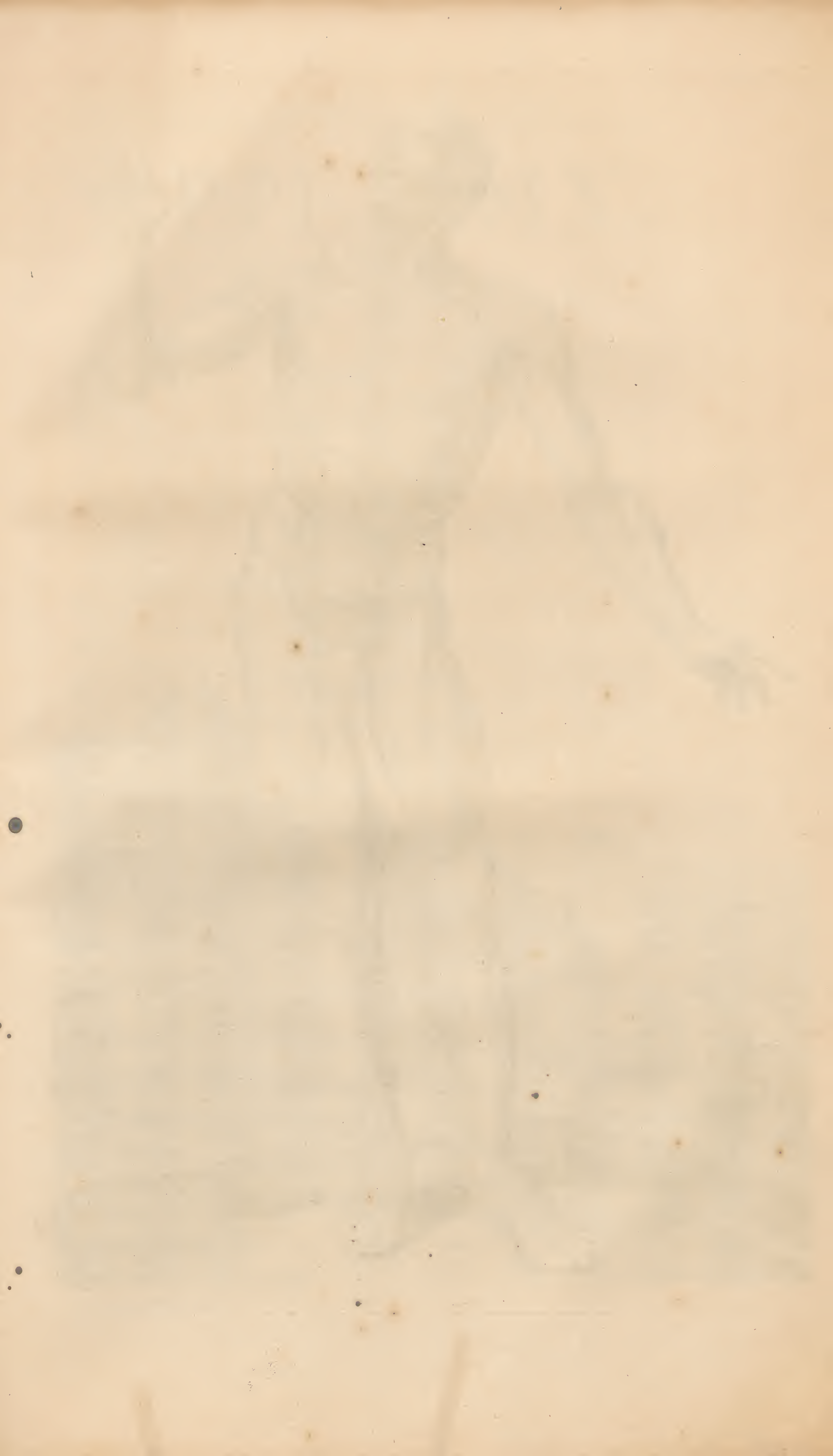
OF THE

HUMAN BODY

WITH AN ATLAS OF CUTS AND FIGURES

TABLES

OF THE





APPENDIX.

THE FIRST TABLE.

Fig. 1.



REPRESENTS the External Muscles as they Appear in their Proper Situation on the Fore-part of the Body, after the Skin, Fat, and Membranes are taken off, together with the *Musculus Quadratus Colli* lying on each Side the Neck, and Tendinous Expansion of the *Musculus Membranosus* from the Fore-parts of the Thighs.

- 1, The *Musculus Frontalis*.
- 2, The *Orbicularis Palpebrarum*.
- 3, The *Elevator Labii Superioris*, and *Dilatator Alae Nasi*.
- 4, The *Elevator Labii Superioris Proprius*.
- 5, Part of the *Elevator Labiorum Communis*.
- 6, The *Orbicularis seu Sphincter Labiorum*.
- 7, The *Depressor Labii Inferioris Proprius*.
- 8, The *Depressor Labiorum Communis*.
- 9, The *Zygomaticus seu Distorter Oris*.
- 10, The *Buccinator*.
- 11, The *Temporalis*.
- 12, The *Masseter*.
- a, The Parotid Salival Gland.
- b, The *Os Jugale*.
- c, The Salival Duct, where it Arises from the Parotid Gland, and passes over the *Masseter* Muscle, whence it Marches thro' the *Musculus Buccinator* to its Orifice in the Internal Membrane of the Mouth, against the *Dentes Molares*.
- d, The Lower Jaw-bone made bare.
- e, The Insertion of the Right Mastoid Muscle, to the *Processus Mammiformis*.
- 13, The *Geniohyoideus*.
- 14, 14, The *Mastoidei*, where their Two Beginnings are Exprest on each Side; the One from the Top of the *Sternum* g, and the Other from the *Clavicula* f: The Termination of the Right Mastoid in the *Processus Mammiformis* e, is also Exprest.
- 15, The *Sternohyoideus* of the Left Side, that of the Right not being Figur'd.
- 16, 16, The *Coracohyoideus* Marching under the Mastoid Muscle.
- 17, 17, Parts of the *Scalenus*.
- 18, Part of the *Elevator Scapulae*.
- 19, 19, Parts of the *Trapezius* or *Cucullaris*, on each Side Inserted to the *Claviculae*.
- 20, The *Deltoides*.
- 21, 21, The Two Pectoral Muscles.
- f, f, The *Claviculae*.
- g, The Upper-part of the *Os Peccoris* or *Sternum*.
- h, The *Scrobiculus Cordis* at the Lower-part of the *Sternum*.
- 22, The *Biceps Humeri*.
- 23, 23, Parts of the *Coracobrachiales*.
- 24, 24, Parts of the *Brachiales Flexores*.
- 25, 25, Parts of the *Brachiales Extensores*.
- i, A Branch of the Axillary Nerves, which passes between the Internal Protuberance of the *Os Humeri* k, and the *Olecranon* or Elbow.
- k, The Internal Protuberance of the *Os Humeri*.
- l, The Large Trunk of the Axillary Artery, which is frequently Prickt by Bold Blood-Letters.
- m, A Thin Membranous Tendon Springing from the *Musculus Biceps Humeri*, which is Expanded over all the External Muscles on the Cubit.
- 26, Part of the *Brachialis Flexor*.
- 27, *Pronator Radii Teres*.
- 28, 28, *Radialis Flexor*.
- 29, 29, *Palmaris Longus*.
- 30, 30, Parts of the *Musculi Flexores Secundi Internodii Perforatus*.
- 31, 31, The *Ulnaris Flexor*.
- 32, 32, The *Supinator Radii Longus* in both Arms.
- 33, Part of the *Radialis Extensor*.
- 34, A Tendon of the *Flexor Tertii Internodii Pollicis*.
- 35, 35, The *Abductor Pollicis* on both Hands.
- n, The *Ligamentum Annulare* of the *Carpus*.
- o, o, The Tendinous Expansion of the *Palmaris Longus*.
- 36, The *Caro Musculosa Quadrata*.
- 37, The *Abductor Minimi Digiti*.
- 38, 38, The Flethy Parts of the *Obliquus Descendens Abdominis* on both Sides, 41, 42, q, q, their Tendons Running over the *Recti* to the *Linea Alba*.
- 39, 39, Parts of the *Latissimus Dorsi* on both Sides.

40, 40, Parts of the *Serrati Majores Antici*.

41, 41, The *Recti Abdominis*, as they Appear under the Tendons of the Two Oblique Muscles.

p, The *Linea Alba*.

q, q, The Tendons of the Two Oblique Muscles, call'd *Linea Semilunaris*, before they March over the *Rectus* to the *Linea Alba*.

r, r, The Fore-parts of the Spines of the *Ossa Ilii*.

s, s, The *Glandulae Inguinales*; neither these Glands, nor those in the *Axilla*, call'd *Glandulae Axillares*, are any where mention'd in the preceding Descriptions: Their Office is to receive the *Lympha* from all the Inferior Parts, and Discharge it again by their Exporting Lympha-Ducts in its Way towards the Thoracick-Duct. If any Parts of the Legs or Thighs are Diseas'd, as in an *Anasarca*, with an *Erysipelas*, Abscess, Exulceration, especially with a *Caries* of the Bone, and the like; you will most commonly find the Inguinal Glandules Tumid and Hard: The like may be Observ'd of the Axillary Glands, when the *Mammae*, Arms, Cubits, or Hands are in like Manner Affected. The Intumescence of these Lymphatick Glands, in the Cases above mention'd, is caus'd by the Vitiated *Lympha*, Arising from the Diseas'd Parts, not passing the *Vesiculae Glandulosae*; whence a Tumor is begun, and is still Increas'd by the Accession of the succeeding *Lympha*, and the Whole Gland becomes Distended to a vast Magnitude; as Appear'd in the Case of the Late Sir *William Crammer*, in whom, after Death, I found the Glandule of the Right Inguine to Weigh above Six Pounds, and the Trunk of the Crural Artery passing thro' the Lower-part of it. Tho' the Surface of this Tumified Gland seem'd to have Matter Fluctuating in divers Parts of it, yet no other than a Glandulous Appearance Offer'd on Dividing it Variously. The like Intumescence of the Inguinal Glands happen'd after Castration, in a *Hernia Carnosa* of the same Side, which in like Manner prov'd Fatal. In the Case of an *Anasarca* of one Leg, on which an *Erysipelas* happen'd, I found the Inguinal Gland on the same Side very much Indurated and somewhat Distended. When the Excoriation from the *Erysipelas* began to Abate of the Flux of Matter, the Inguinal Gland above became more and more Distended; at length the Outward Skin on it began to look Red, and soon after Impossumated: After the contain'd Pus was Discharg'd, I could pass my Probe very Deep into divers Interstices of the Gland, in which the Matter was Lodg'd; all which *Sinus*s after some Weeks Clos'd by the Use of Desiccative Topicks, with convenient Bandage, without Hard Tents or Dozils. In this Case the Patient took divers Doses of *Calamel*, and Strong Purges. The like Intumescence of these Glands also happens in Venereal Cases, especially when the External Parts of the *Penis* are Ulcerated, as I have elsewhere taken Notice of.

t, The *Os Pubis*.

u u, The Process's of the *Peritonaeum* Covering the Spermatick Vessels, as they Descend to the *Testes*.

42, The *Pyramidales*.

43, 43, The *Musculus Communis Membranosus* on both Sides, Part of its Tendinous Expansion of the Left Side being Exprest, Fasten'd to the Upper *Appendix* of the *Fibula* x.

44, 44, The *Sartorius* on both Sides.

45, Part of the *Gluteus Medius* made Tumid by the Great *Trochanter*.

46, 46, The *Rectus Femoris* on both Thighs.

47, 47, The *Vastus Externi*.

48, 48, The *Vastus Interni*.

49, Part of the *Peetmus*.

50, 50, The Great and First Describ'd Heads of the *Triceps* on both Sides.

51, 51, The *Gracilis* partly Exprest on both Sides.

w w, The *Patellae* or Knee-pans.

x, Part of the Tendon of the *Membranosus*, Inserted to the Upper *Appendix* of the *Fibula*.

y, The Right *Tibia* made bare.

z, The *Malleolus Internus*.

*, The *Malleolus Externus*.

††, The Annular Ligament of the *Tarsus*.

52, The *Tibialis Anticus*.

53, 53, The *Extensor Pollicis Pedis Longus* on both Feet.

54, Part of the *Peroneus Secundus* or *Semistibuleus*.

55, Part of the *Peroneus Primus* or *Fibuleus*.

56, 56, Parts of the *Gastrocnemus Externus* on both Legs.

57, Part of the *Flexor Tertii Internodii Digitorum Pedis Perforans*.

58, Part of the *Gastrocnemus Internus*.

59, The *Abductor Pollicis*.

60, Part of the *Extensor Secundi Internodii Digitorum Pedis*, or *Extensor Brevis*.

61, The Tendon of the *Extensor Pollicis Brevis*.

62, The *Extensor Tertii Internodii Digitorum Pedis Longus*.

A P P E N D I X.

T H E

S E C O N D T A B L E.

Fig. 1.



THE External Muscles and other Parts as they Appear on the Back-part of a Humane Body, after the Skin, Fat, and Membranes are remov'd.

- 1, The *Musculus Temporalis*.
- 2, The *Orbicularis Palpebrarum*.
- 3, Part of the *Zygomaticus*.
- 4, The *Depressor Labiorum Communis*.
- 5, The *Masseter*.
- 6, Part of the *Mastoidæus*.
- 7, Part of the *Elevator Scapulæ*.
- 8, Part of the *Splenius*.
- 9, The *Occipitalis*.
- 10, 10, 10, The *Cucularis* or *Trapezius*, on both Sides.
- a, The *Os Bregmaticum*;
- b, The *Occipitis*.
- c, Part of the Sagittal Suture, or Longitudinal Suture.
- d, The Lambdoidal Suture.
- e, The *Os Jugale*.
- f, The Parotide Salival Gland.

Under this Parotide Salival Gland, are plac'd divers Lymphatick Glands, which receive *Lympha* from their Importing Lymphæ-duets, Arising from the Neighbouring Parts as well as the Parotide Salival Gland it self. Besides these Lymphatick Glands immediately under the Parotides, there are still others of the same kind below them, lying near the Jugular Veins, and are continued to the *Claviculæ*; all these Transmit *Lympha* (by their Exporting Lymphæ-duets) either to the Subclavian Glands, or to the Upper-part of the Thoracick-duet immediately. These Lymphatick Glands become Tumorid in Scrophulous Cases, and may be happily remov'd by Incision, and no great Flux of Blood follow; which Practice is Preferable to the Application of Escharoticks which are commonly made use of. I have at this Time a Patient in whom not only the above mention'd Superior Lymphatick Glands of the Left Side were Distended, but the Parotide Salival Gland of the same Side was very much Indurated, and not a little Distended also; in the Middle of which Induration of the Parotide Gland, I found an Aperture whence the Spittle Flow'd in no small Quantity, in Mastication: In Pressing the Part near the Aperture, I found the Spittle Gush out, which had Lodg'd it self between the Skin and the Gland. After the External Skin was Divided, I could plainly see the Spittle Arise from divers Interstices of the *Lobuli* of the Gland; when he Chaw'd any Thing, the Spittle Flow'd on his Handkerchief (*per Stillicidium*) which he was wont to hold under his Ear to receive it. The *Sinus*'s from whence the Spittle was Discharg'd being thus laid Open, the Quantity of Spittle which Flow'd, soon Abated; the Fungous Flesh being remov'd by the Application of Gentle Escharoticks, the Flux of *Saliva* Lessen'd. He Drinking of a Decoction of *Sarsaparilla*, *China*, *Lig. Guaiaci*, &c. for his common Drink, and Eating of a very Drying Diet, such as Biskets, Almonds, and the like.

Aquapendens in Treating of the Wounds of the Cheeks, mentions a clear Water not unlike the Tears of the Eyes, which he saw Flow from a very small Hole when the Patient Eat; to which he adds, *Unde & quomodo effluat, Ego certe nescio*.

The Accurate *Nuck* tells us (from *Roonhuyse* a Dutch Writer) of a Patient in whom the Spittle Flow'd from an Ulcer in the Cheek, not unlike that above mention'd: Nor was the Flux of Spittle Abated, and the Ulcer brought to a *Cicatrix* without a Drying Diet, as the Incomparable *Nuck* takes Notice. A Flux of *Lympha* sometimes happens in Wounds of the Limbs, where the Lymphæ-duets are Wounded. After Letting Blood in the Flexure of the Cubit, I saw (the next Day) a vast Quantity of *Lympha* had Stain'd the Shirt which lay over the Orifice, and about the Arm; the next Day after, the Flux of *Lympha* Abated, and the Orifice soon after Clos'd. Perhaps a great Part of that Thin Matter call'd *Gleet*, which we find some Days after Amputations, or large Wounds, Flows from the Divided Lymphæ-duets as well as Nutritive Tubes of the Part. When Lymphæ-duets are broken in Old Ulcers, and the Flux of *Lympha* do's not easily Abate, tho' the Patient is confin'd to a Drying Diet. The like Difficulty attended the restraining of the Flux of *Lym-*

pha when a Lymphæ-duet was Open'd in an Issue in the Leg, as was Communicated to me by *Mr. Bernard* and *Mr. Guddier* both Experienc'd Surgeons of this Town; in which Case a Drying Diet stop't the Flux, and the Ulcer was soon after *Cicatric'd*; tho' many Desicatives Topicks, as well as Actual and Potential Cauteries, had before prov'd Ineffectual. By this we may see (however some endeavour to Disparage Anatomy) how Useful it is in the Practice of Surgery.

- g, The Spine of the Seventh *Vertebra* of the Neck.
- h, h, The Tendons of the *Cucularis* on both Sides Inserted to the Spines of the *Scapulæ*.
- i, i, The Extremities of the Spines of the *Scapulæ*, to which the *Claviculæ* are Connected.
- kk, The Lower Angles of the *Scapulæ*.
- ll, The *Basis Scapulæ*.
- mm, The Upper *Appendices* of the *Ulnæ*, call'd *Olecrani*.
- nn, The External Protuberance of the *Ossa Humerum*, where the *Radii* are Articulated, and the Muscles Extending the *Carpi* and Fingers do Arise.
- oo, The Inferior *Appendix* of the *Ulna* next the *Carpus*.
- 11, The *Musculus Deltoides* of the Right Side.
- 12, 12, The *Infra-spinatus* on both Sides.
- 13, 13, Parts of the *Rotundi Minores*.
- 14, 14, The *Rotundi Majores*.
- 15, 15, 15, The *Latissimi Dorfi*.
- ** Their Tendinous Parts passing over the *Sacrolumbales* and *Dorfi Longissimi*.
- 16, 16, Parts of the *Rhomboides* on both Sides, near their Insertions to the *Basis* of the Shoulder-blades, ll.
- 17, 17, The *Gemellus*, or *Biceps Externus* on both Arms.
- 18, 18, Parts of the *Brachiales*.
- 19, 19, Parts of the *Supinator Radii Longus* on both Sides.
- 20, 20, The *Anconeus*;
- 21, 21, The *Radialis Extensor* on either Cubit.
- 22, 22, The *Extensor Digitorum Communis*;
- 23, 23, The *Extensor Minimi Digiti*;
- 24, 24, The *Ulnaris Extensor*;
- 25, 25, Parts of the *Perforatus* or *Flexor Secundi Internodii Digitorum*.
- 26, 26, The *Ulnaris Flexor* on both Cubits.
- 27, Parts of the Tendons of the *Radialis Flexor & Palmaris*.
- 28, 28, The *Abductores Minimi Digiti* on either Hand.
- 29, The *Adductor Pollicis ad Dorsum Manus*.
- 30, The Extending Muscles of the Thumb.
- 31, 31, Parts of the Oblique Descending Muscles of the *Abdomen* on both Sides.
- 32, The *Gluteus Major*.
- 33, 33, Parts of the *Gluteus Medius* on both Sides.
- 34, The Flethy Part of the *Membranofus* or *Musculus Communis Membranofus*.
- pp, The Back-part of the Spines of the *Ossa Ilii*.
- q, The *Os Sacrum*.
- r, A Prominence made by the Great *Trochanter* under the Tendinous Expansion of the *Gluteus Major*.
- s, s, The Great Crural Nerves as they Descend in the Ham.
- t, The Upper *Appendix* of the *Fibula*.
- uu, The Lower *Appendix* of the *Fibula*, call'd *Malleolus Externus*.
- w, The Lower *Appendix* of the *Tibia* or *Malleolus Internus*.
- x, The Tendon of the *Gastrocnemii*.
- y, The *Os Calcis*.
- 35, 35, Parts of the *Vastus Externi*.
- 36, 36, The *Biceps Femoris* on both Sides.
- 37, 37, The *Seminervosus* or *Semitendinosus*.
- 38, 38, The *Seminembranosus*.
- 39, 39, Parts of the *Triceps Femoris* on both Sides.
- 40, Part of the *Gracilis* on the Left Thigh.
- 41, Part of the *Sartorius* on the same Thigh.
- 42, Part of the *Vastus Internus* on the same Thigh also.
- 43, 43, The *Gastrocnemii Externi*.
- 44, 44, The *Gastrocnemii Interni* Cover'd with the Tendons of the *Externi*.
- 45, The *Peroneus Longus*.
- 46, 46, The *Abductor Minimi Digiti* on both Feet.
- 47, Part of the Tendon of the *Extensor Digitorum Longus* on the Right Foot.





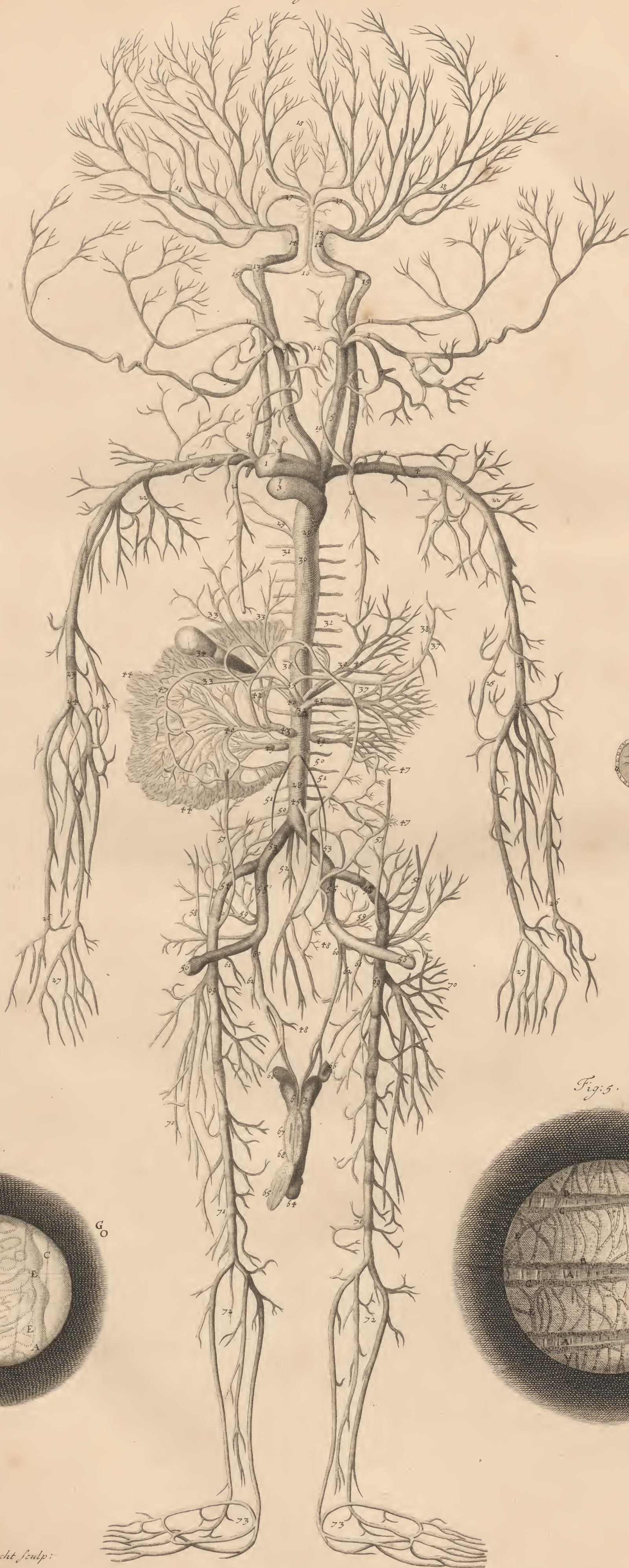


Fig. 7.

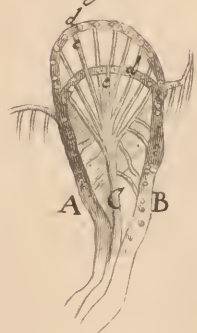


Fig. 6.

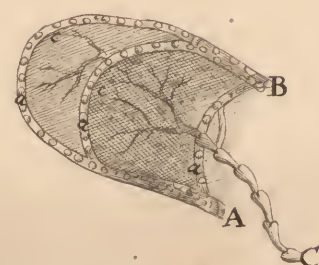


Fig. 4.

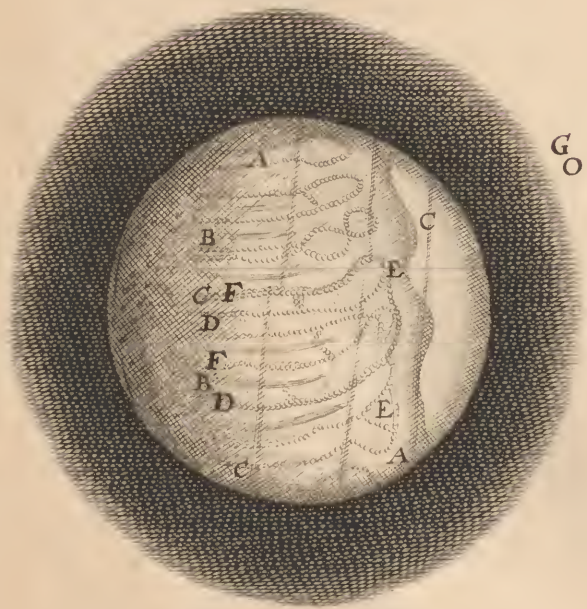
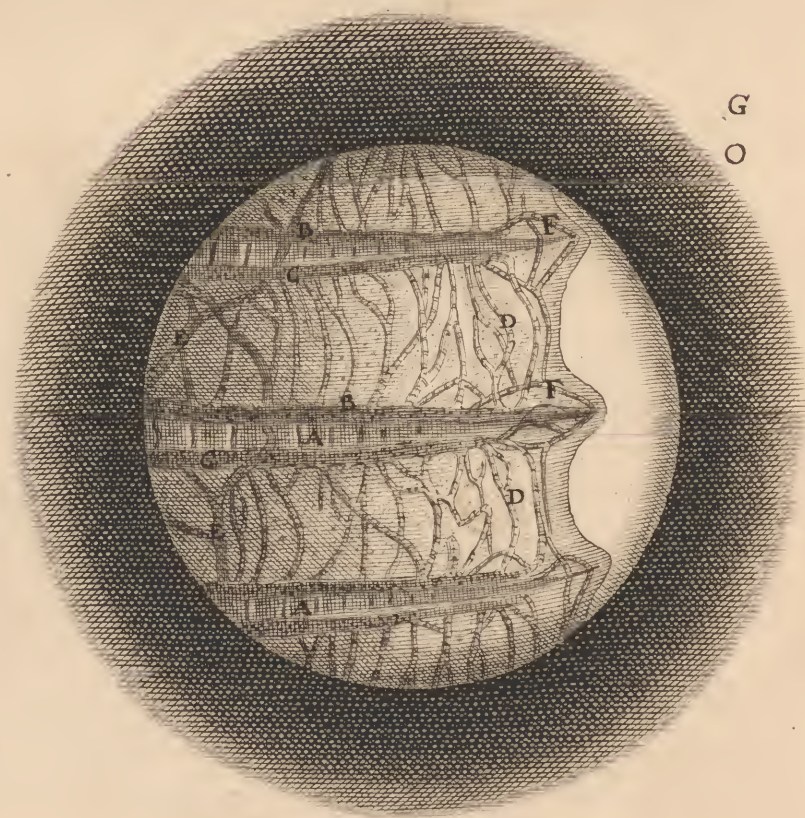


Fig. 5.



APPENDIX.

THE THIRD TABLE.

Fig. 3.



HE W S the Trunks and large Ramifications of all the Arteries of a Humane Fetus, Injected with Wax, and Display'd after Dissection.

1, The Aorta, or Arteria Magna, cut from its Origin at the Orifice of the Left Ventricle of the Heart.

2, The Trunk of the Great Coronal Artery of the Heart Arising from the Beginning of the Aorta; the Rise of the Lesser Coronal Artery, not Appearing in this Position of the Arteria Magna.

3, The Canalis Arteriosus Fill'd with Wax, by Injecting it into the Aorta: This Arises from the Upper Part of the Trunk of the Pulmonick Artery (near its Two Ramifications which pass into the Lungs) and after an Oblique Descent under the Beginning of the Aorta, Empties it self into the Upper Part of its Descending Trunk, as here Express'd 28. Besides this Communication between the Right Ventricle of the Heart of a Fetus, and Arteria Magna; there is another call'd Foramen Ovale, by which Part the Blood, at its Entrance into the Right Ventricle, passes into the Pulmonick Vein, and the Left Ventricle of the Heart, thence to the Aorta. Hence it Appears, That the Blood which Flows into the Right Ventricle of the Heart of the Fetus, Passes immediately (by the Canalis Arteriosus) to the Arteria Magna, as well as the Blood of the Left Ventricle (which is Receiv'd immediately from the Vena Cava, or Right Auricle of the Heart) into the Right Ventricle, passes immediately to the Aorta, by the Syssole of the Heart, as well as the Blood of the Left Ventricle: Nor do's any Part of the Blood of the Right Ventricle pass into the Left; Or any Blood of the Left Ventricle first pass the Right, as in the Adult. Hence the Heart in the Fetus may be said to have but One Ventricle in Effect, since the Blood which passes One, do's not come into the Other, before it arrives at the Aorta. After the Birth, when the Infant has Receiv'd Air into the Lungs (and their Vesiculae remain Distended, and the Ramifications of the Pulmonick Arteries and Vein consequently are more Display'd) the Blood then begins to pass their Extremities, more freely than before; and the Arterious Channel at length becomes neglected, as well as the Foramen Ovale; the Foramen becoming a Ligament, and the Latter Closing up. The too early Occlusion of these Passages in Children, often produces many Disorders, as Inflammation of Divers Parts of the Head, Neck, and Lungs; in which Cases, Bleeding is of great Use: Of this, I have met with many Instances in the Dissection of Children. I have often found the Foramen Ovale open in the Adult: The Canalis Arteriosus, for what I have observ'd, closes sooner than that Foramen.

4, 4. The Subclavian Arteries, Arising from the Arteria Magna, to which the Axillary Arteries, and those of the Arms (23, 23,) are continu'd.

5, 5. The Two Carotide Arteries Arising from Aorta, between the Subclavian Arteries.

6, 6. The Two Vertebral Arteries, Arising from the Subclavicular, which pass thro' all the Transverse Processes of the Vertebrae of the Neck, from whence they are freed.

7, 7. The Arteries which Convey Blood to the Lower Part of the Face, Tongue, Adjacent Muscles, and Glandules.

8, 8. The Trunks of the Temporal Arteries Spring from the Carotides, and giving Branches to the Parotid Glands (9, 9,) as well as the Temples (10, 10,) also to the Neighbouring Muscles, Hairy-Scalp, and Forehead.

11, 11. The Occipital Arteries, whose Trunks pass close by the Mammosform Process, and are Distributed on the Hinder Part of the Hairy-Scalp, where they are Inoculated with the Branches of the Temporal Arteries.

12. Divers Arteries, which carry Blood to the Fauces Gargareum and Muscles of those Parts.

13, 13. The Contortions of the Carotid Arteries, as they pass the Basis of the Skull to the Brain.

14, 14. Those Parts of the Carotid Arteries, where they pass by each Side of the Sella Turcica, where Divers Small Branches do Arise from them, and help to Compose the Rete Arabile, which is more conspicuous in Quadrepedes than Men.

15, 15. The Contortions of the Vertebral Arteries, as they pass the Transverse Processes of the First Vertebra of the Neck, towards the Great Foramen of the Os Occipitis. I have more than once taken Notice, That the Cavities of these Arteries, where they are Contorted, have been Larger than their Inferior Trunks; whereby the Impetus of the Blood must necessarily be very much Lessen'd, as well as by their Contortions only. In Quadrepedes the Angles of these Contortions of the Arteries of the Brains are more Acute, which in them is the more Necessary to Lessen the Force of the Blood at their Extremities, by Reason of the Horizontal Position of their Trunks.

16. The Vertebral Arteries, where they Ascend on the Medulla Oblongata, towards the Annular Protuberance, or Pons Varoli.

17, 17. The Communicant Branches between the Carotid and Vertebral Arteries; in this Subject, somewhat Larger than we Commonly find them.

18, 18. The Ramifications of the Arteries within the Skull; the Larger Trunks of which lie between the Lobes of the Brain, and in its Sulci. From the Extremities of these Arteries of the Brain are Continu'd its Veins, whose Trunks vary much in their Position from the Arteries: They Entering the Brain at its Basis, and Distributing themselves, as above noted; whereas the Trunks of the Veins are Extended on the Surface of the Brain, and Discharge their Blood into the Longitudinal Sinus. Nor do's the Veins of the Brain Accompany its Arteries at their Ingress, as in other Parts: Or the Arteries and Veins of the Diva Mater, pass the same Foramen in the Basis of the Skull.

19, 19. The Arteries of the Larynx Thyroid Glandules, and Adjacent Muscles and Parts, Arising from the Subclavian Arteries.

20, 20. Others Arising near the Former, which convey Blood to the Muscles of the Neck, and Scapula.

21, 21. The Mammariae, which Arise also from the Subclavian Arteries, and Descend on the Cartilages of the True Ribs Internally, about Half an Inch distant on each Side the Os Pectoris, or Sternum. Some Branches of these pass thro' the Pectoral, as well as Intercoastal Muscles, and give Blood to the Mamme, where they meet with some Branches of the Intercoastal Arteries, to which they are Inoculated. These Mammary Arteries join with the Large Trunks of the Epigastricks (57, 57,) also, by which Means the Impetus of the Blood in Integuments of the Abdomen, is carry'd on with more Force; the Extremities of the Intercoastal and Lumbal Arteries do also Inoculate with each other, as well as with These.

22, 22. The Arteries of the Muscles of the Os Humeri, and some of those of the Scapula.

23, 23. Those Parts of the Large Trunks of the Arteries of the Arms, which are liable to be Wounded in Opening the Vena Basilica, or Innermost of the Three Veins in the Bending of the Cubit, (See Fig. 1. of this Appendix between 26. and m,) where the Precise Progress of this Artery is Express'd.

24, 24. The Divisions of the Arteries of the Arm below the Flexure of the Cubit.

25. A Communicant Branch of an Artery, Arising from the Trunk of the Artery of the Arm, above its Flexure at the Cubit, which is Inoculated with the Arteries of the Cubit below. In some Subjects you will not find This Communicant Branch, as here represented; in whom there are divers Smaller Branches of the same Kind. By these Communicant Branches (of the Upper Part of the Brachial Artery with those of the Cubit) the Blood still passes, tho' the Trunk (23) is firmly Ty'd, which is done In taking up the Artery, as it's call'd when 'tis Wounded, in the Cause of an Aneurisma. Besides firmly Tying the Trunk of the Artery above the Place where it is Wounded; it is also Necessary to tie it in like manner below, lest the Blood Convey'd by the Communicant Branches to the Inferior Trunk, still pours out at the Wound of the Artery from below, in a Retrograde Manner.

26. The External Artery of the Cubit, which makes the Pulse near the Carpus.

27. The Arteries of the Hands and Fingers.

28, 28. The Descending Trunk of the Arteria Magna.

29. The Arteria Bronchialis, Springing from one of the Intercoastal Arteries; It sometimes Arises immediately from the Descending Trunk of the Aorta, at other times from the Superior Intercoastal Artery, which Springs from the Subclavian. These Bronchial Arteries Inoculate with the Pulmonary Arteries, as I have elsewhere taken Notice, and which I since find is mention'd and Figur'd by the Accurate Ruyfch, Epist. Anatom. 6. Fig. 5. c, c, c.

30. A Small Artery Springing from the Fore-part of the Aorta Descendens, passing to the Gula: Ruyfch tells us of Branches of Arteries from the Superior Intercoastal, which go to the Gula.

31, 31. The Intercoastal Arteries on each Side the Arteria Magna Descendens.

32. The Trunk of the Arteria Celiac, from whence Springs

33, 33. The Hepatic Arteries, and

34. The Arteria Cystica, lying on the Gall-bladder,

35. The Arteria Coronaria Ventriculi Inferior,

36. The Pylorica,

37, 37. The Epiploica Dextra, Sinistra, and Media, Springing from the Coronaria.

38. The Ramifications of the Coronary Artery, which embrace on the Bottom of the Stomach.

39. The Coronaria Ventriculi Superior.

40, 40. The Phrenick Arteries, or the Two Arteries of the Diaphragm; that of the Left Side Arising from the Trunk of the Arteria Magna, the Right Springing from the Celiac.

41. The Trunk of the Splenick Artery, Arising from the Celiac: This is Contorted in the Adult, as it appears Tab. 36.

42. Two Small Arteries going to the Upper Part of the Duodenum and Pancreas; the Rest of the Arteries of the Pancreas Spring from the Splenick Artery in its Passage to the Spleen.

43. The Trunk of the Arteria Mesenterica Superior, Turn'd towards the Right Side.

44, 44. The Branches of the Superior Mesenterick Artery, freed from the Small Guts; here the Various Anastomoses, the Branches of this Artery make in the Mesentery, before they arrive at the Intestines, may be observ'd.

45. The Inferior Mesenterick Artery, Arising from the Arteria Magna.

46. A Remarkable Anastomosis of this Inferior Mesenterick Artery, with the Superior.

47, 47. The Branches of the Inferior Mesenterick Artery, as they pass to the Intestinum Colon;

48, 48. Those of the Rectum.

49, 49. The Arteries of the Kidneys.

50, 50. The Vertebral Arteries of the Loins.

51, 51. The Spermatick Arteries, which descend to the Testes, are so Small as to escape being Fill'd with Wax.

52. The Arteria Sacra.

53, 53. The Iliaci.

54, 54. The Rami Iliaci Externi:

55, 55. The Iliaci Interni; which are here Larger in the Fetus proportionably, than in the Adult, by Reason of their Conjunction with the Two Umbilical Arteries.

56, 56. The Two Umbilical Arteries cut off.

57, 57. The Epigastrick Arteries, which Arise under the Right Muscles of the Abdomen, and are Inoculated with the Mammariae; above Noted.

58, 58. Branches of the External Iliac Arteries, passing between the Two Oblique Muscles of the Abdomen.

59, 59. Branches of the Internal Iliac Arteries, which Convey Blood to the Extending and Obturating Muscles of the Thighs.

60, 60. The Trunks of the Arteries, which pass to the Penis.

61, 61. The Arteries of the Bladder of Urine.

62, 62. The Internal Arteries of the Pudendum, which with those here Express'd of the Penis, make the Hypogastrick Arteries in Women. The External Arteries of the Pudendum, Arise from the Upper Part of the Crural Artery, which is immediately below the Epigastricks.

63. The Penis Distended with Wind, and Dry'd.

64. The Glans Penis.

65. The Upper Part or Dorsum Penis, cut from the Body of the Penis, and Rais'd to show the Corpora Cavernosa Penis.

66, 66. The Corpora Cavernosa Penis, Freed from the Os Pubis, and Ty'd after Inflation.

67. The Two Arteries of the Penis, as they Appear Injected with Wax, in each Cavernous Body of the Penis.

68. The Capsula, and Septum of the Corpora Cavernosa Penis.

69. The Crural Arteries.

70, 70. The Arteries, which pass to the Muscles of the Thighs and Tibiae: The Nomination of each Muscle in this Place would be Tedious, and of no Use; wherefore I shall pass them by here, as I have done in the Arms; it being sufficient, we know, the Progress of the Great Trunks, to avoid Wounding them in Chirurgical Operations, or to find them on Ocasion: We shall begin first with the Description of the Trunk of the Arteries of the Arm. So soon as the Subclavian Artery has pass the Clavicula, it marches thro' the Axilla, wherefore it's call'd Axillaris, whence it's Trunk Descends between the Musculus Brachialis Internus and Externus, on the Inside of the Arm, and is Divided below the Bending of the Cubit, as you see it Express'd in the Figure; it Parting with Several Branches to the Neighbouring Muscles, and Parts it Passes by; Their Distribution not being alike in any Two Subjects, I have hitherto Examind, or in the Right and Left Sides of the same, as appears in this Figure: Tho' the Progress of their Large Trunks are commonly Uniform; yet in that too, they vary considerably, and the Trunk of the Artery at the Flexure of the Cubit sometimes runs Collateral with the Vena Basilica, tho' it most commonly passes Under that Vein: Of this, Those that Let Blood ought to take Notice, and that the Vessel they See or Feel has no Pulsation, before they thrust their Launcet into it. Nor can I omit a Useful Observation in this Place; which is, That the Operator before He applies his Ligature on the Arm, should first feel for the Artery, because afterwards its Pulsation cannot be so easily Discover'd; the Reason of which is Obvious. After Amputation, above the Elbow, the Trunk of the Axillary Artery only, affords any Considerable Flux of Blood: In Amputations below the Elbow, we find Two, sometimes Three, and Four Considerable Trunks, which may require Tying Up; the Manner of which Practice is so well Describ'd in the Works of Ambrose Pary, I shall omit saying any Thing of it in this Place, tho' it has been most commonly Disus'd in this Kingdom till of Late; the many Conveniences of which Practice will (I don't doubt) sufficiently Recommend it to a General Use, as well in other Impetuous Fluxes of Blood, as in those after Amputations. After the External Iliac Artery (54.) is pass out of the Cavity of the Abdomen, it obtains the Name of the Crural Artery, (69.) and Descends obliquely on the Crural Vein, on the Fore-part of the Thigh, immediately Under the Musculus Sartorius: About Four Fingers Breadth above the Knee, these Two Large Blood Vessels pass thro' the Lower Part of the Musculus Triceps to the Ham, (71.) here the Vein is Plac'd Above the Artery as in other Parts, and so Descends to the Foot, after being Divided in Three Branches, as is Express'd in Fig. 72.

71. That Part of the Crural Artery, which passes the Ham.

72. The Three Large Trunks of the Arteries of the Leg.

73. The Arteries of the Foot.

Fig. 4.

The Extremities of the Veins and Arteries, as they Appear by a Microscope in the Transparent Fin of a Living Grig.

A A, The Fin of a Grig, lying in a Glas Tube.

B B, The Cartilaginous Extremities of the Ribs, on which the Fin is Extended.

C C, The Small Scratches, or Streaks we commonly find in the Glas Tube.

D D, The Branches of the Arteries, Proceeding from their Larger Trunks in the Body of the Grig, Conveying the Blood to the outmost Margine of the Fin.

E E, The Extremities of the Arteries, Continu'd to the Veins, wherein One Globule of the Blood only moves before another. Besides these Communications of the Veins with the Arteries, there are still others which are Larger, wherein more than two Globules can pass together: Those are every where Interspers'd with the Lesser, as plainly appears in the Fin and Tail of the Flounder, Fig. 5. F.

FF, The Veins which convey the Refluent Blood to the Heart.

G G, The Magnitude of the Area, taken by the Microscope.

Fig. 5.

The Extremity, or outmost Margin of the Side-Fin of a Small Living Flounder, view'd with a Microscope.

A A, The Cartilaginous Extremities of the Ribs, on each Side of which, the Trunks of the Great Blood Vessels pass.

B B, The Arteries.

C C, The Veins.

D D, Their Lesser Extremities Continu'd to each other.

E E, The Large Branches of Veins and Arteries, Inoculating with themselves, before they arrive at their Extremities.

FF, The Larger Conjunctions of the Veins and Arteries, at the outmost Margin of the Fin.

G G, The Area which the Microscope took in, as it appears to the Naked Eye.

Fig. 6.

Represents (according to our Conception) the Origination of the Lympheducts from the Extremities of the Blood Vessels.

A, The Small Branch of an Artery.

a a, Its Extremity Continu'd to the Vein.

B, The Branch of a Vein.

C, A Lympheduct Arising from the Extremities of the Blood Vessels, either by the Mediation of Divers Vesiculae, or Small Tubes; which have Apertures into the Sides of the Blood Vessels.

Fig. 7.

The Manner of the Origin of the Excretory Ducts, from the Extremities of the Blood Vessels.

A, The Artery.

B, The Vein.

C, A Branch of the Ductus Excretorius.

d d, The Extremities of the Blood Vessels.

e e, The Extremities of the Excretory Tubes, at their Rise from the Pores in the Sides of the Blood Vessels, before they Unite in the Branch of the Duct.

A P P E N D I X.

T H E

F O U R T H T A B L E.



Fig. 8.
S the Basis of the Skull with the First Vertebra of the Neck remaining on it, together with divers Muscles and other Parts.
A, B, C, C, D, D, The First Vertebra of the Neck: A, its Fore-part, behind which, the Tooth-like Process of the Second Vertebra is plac'd; B, its Back-part wanting a Spinal Process where the Musculi Recti Minores Potius Arise; C, C, The Transverse Process's: D, D, Two somewhat Oval Process's of the First Vertebra, which Move Side-ways on the like Process's on the Upper Part of the Second Vertebra of the Neck.

E, A Cavity immediately behind the Fore-part of the First Vertebra, Fenc'd with a strong Ligament Backwards next the Medulla Spinalis, in which the Tooth-like Process of the Second Vertebra Tab. 93. Fig. 3, 4. A A, is receiv'd.

F, The Great Foramen, through which the Medulla Spinalis Descends from the Head.

G, A Small Muscle, which from its Position I call Rectus Lateralis: I first met with it in Dissection, some time since, and afterwards found it was partly Mention'd by Galen, and Describ'd by Fallopius: It Arises from the Superior Part of the Extremity of the Transverse Process of the First Vertebra of the Neck, and Ascends directly to its Implantation in the Os Occipitis; when it Acts, it Nods the Head Laterally.

H, The Musculus Rectus Anterior Minor, so call'd from its Progress, Situation and Size, it being much less than the Rectus Major, Tab. 13. L. L. It Arises from the Fore-part of the First Vertebra, and is Inserted to the Appendix of the Os Occipitis: This with its Partner Nod the Head Forwards, and may be term'd Annuler.

I, The Perforations in the Transverse Process's of the First Vertebra, in which the Trunks of the Vertebral Arteries and Veins Pass.

K, The Trunks of the Vertebral Arteries in their Contorted Passage between the Transverse Process of the First Vertebra and Great Foramen (F) of the Os Occipitis.

L, The Mamiform Process's.

M, The Cartilages of the Meatus Auditorius.

N, A Probe Inserted into the Meatus à Palato ad Aures. This Passage from the Fauces admits the Air to Pass from thence into the Cavity of the Tympanum, whereby the Membrana Tympani becomes more Distended, and the least Impetus of the outward Air Shakes it, together with its little Bones that are Contiguous to it. Besides this Passage into the Tympanum, there is another Passage out of it, by the Upper Part of the Membrana Tympani, into the Meatus Auditorius, by which some in holding their Nostrils and Mouths, and forcing up their Breath, can move a small Feather or the Flame of a Candle, when held near the Outward Ear; in others it's still Opener, and they can Blow Smoke out at their Ears. Tho' this Passage thro' the Tympanum is not commonly so Open as in the First Case, yet naturally there is a Small Passage by the Upper Part of the Membrana Tympani into the Meatus Auditorius, which seems necessary, to the End when the Tympanum is Fill'd with Air, any Sudden Impetus of the External Air should not Violate the Membrana Tympani. The Meatus à Palato ad Aures do's not only Convey Air into the Tympanum, but (constantly remaining Open) it Admits of a Fluctuation of the Contain'd Air of the Tympanum, as well as a Fresh Supply: If this Passage is Straiten'd, a Difficulty of Hearing necessarily Follows; if it is totally Obstructed, a Deafness; in which Case, the Taking of Sneezing Powders gives Relief.

O, The Glandulous Membrane Contin'd from the Foramina Narium to the Inside of the Fauces.

P, The Processus Styloides.

Q, The Carotid Artery Cut off near its Entrance into the Os Petrosum.

R, The Lower Parts of the Os Jugalia.

S, A Cartilaginous Body lying in the Depression of the Os Temporale, where the Processus Condyliformis of the Lower Jaw is Articulated.

T, The same Intermediate Cartilage of the Articulation Rais'd.

V, The Smooth Sinus in the Os Temporale, which Receiv'd the last mention'd Cartilage.

W, The Upper Part of the Os Temporale Cut off.

X, The Os Occipitis, in like Manner Saw'd off.

Y, The Musculus Occipitalis, as it Arises from that Part of the Os Occipitis, where the Muscles of the Head are Inserted, whence Mounting it, soon becomes Tendinous, and Marches on the Sinciput, where it's join'd with the Tendon of the Frontalis: Unless it may be Suppos'd, that the Occipital and Frontal Muscles are One Biventral Muscle, Arising from the Occiput and Inserted to the Lower Part of the Skin of the Fore-head, and being Fasten'd to the Hair-scap, Moves it Forwards and Backwards, as well as Lifts up the Lower Part of the Fore-head with the Eyebrows.

Z, The Thinner Part of the Os Occipitis, where the Muscles of the Head are Inserted.

a, The Gargareon Supported by the Probe, N N, Inserted into the Meatus à Palato ad Aures.

b, The little Glandules, which Appear in Cutting the Fauces from hence.

c, The Extremity of the Processus Pterygoideus, or more properly the Extremity of a Small Slender Process above the Processus Pterygoideus in this Position of the Skull; since Anatomists in Describing the Muscles of the Uvula have call'd this Process Pterygoideus or Aliformis, we shall still Retain the same Name, tho' the Aliform Process's Express, Tab. 92. Fig. 2. K, are Distinct Process's, and no ways like these.

dd, The Musculi Sphenopterigoistaphilini, so call'd from their Origin, Progress, and Insertion: they are also call'd Pterigoalatiini and Sphenopterigoistaphilini; they Arise Flethy from an Acute Process of the Os Sphenoides Express Appen. Fig. 15. H. whence they Pass to the Processus Pterygoideus, c c, where they become Tendinous, and are Reflected over those Process's to their Insertion on the Fore-part of the Gargareon: When these Act, they Draw the Fore-part of the Gargareon towards the Pterigoideus Process's, where by it's pull'd somewhat Upwards, as well as Forwards.

e, The Sphenostaphilini: These Arise from the same Process's of the Os Sphenoides with the former, and are Inserted on the Back-part of the Gargareon Opposite to the former. These Draw the Uvula Upwards and Backwards, whereby it Prevents the Ascent of the Aliment into the Foramina Narium in Deglutition, as it Happens in those in whom the Uvula is wanting.

f, The Musculus Pterygoideus Externus Left at its Origin, at the External Part of the Processus Pterygoideus, as well as the Upper Part of the Os Sphenoides itself; whence it Passes Backwards to its Insertion at the Neck of the Processus Condyliformis of the Lower-Jaw. When this and its Partner Act they Draw the Lower-Jaw Forwards, whereby the Fore-teeth of the Lower-Jaw are Driven beyond those of the Superior, as Fallopius Observes.

g, The Musculus Pterygoideus Internus also Free'd from the Lower-Jaw, and Left at its Origin: Tab. 15. Fig. 2. N. It's Represented at its Insertion.

h, Some Appearance of the Septum Narium Backwards.

ii, The Dentes Molares.

kk, The Canini.

l, The Incisores.

m, The Glandula Labiorum, as they Appear in the Inside of the Upper Lip. Under the Internal Membrane of the Mouth; each of these Glands has an Excretory Duct, which Perforates the Membrane of the Mouth at a small Papilla, by which a Salivary Humor is Emitted into the Mouth: The like Glands may be seen on the Inside of the Cheeks.

n, The Tip of the Nose.

o, The Hairs of the Palpebrae.

Fig. 9.
The External Surface of One of the Glandulae Tonsillae or Amigdale, where the many large Foramina of its Excretory Ducts Appear, by which its Pituitous Matter is Discharg'd into the Fauces, which joins with the Aliment in its Descent to the Gula.

Fig. 10.
The Receptaculum Chyli Fill'd with Quick-silver, with the Neighbouring Lymphatick Glands remaining in their Proper Situation, together with the Adjacent Parts; as I could make a Sketch of them whilst I was Demonstrating the Parts of a Humane Body to some Worthy and Ingenious Gentlemen, when Professor Bidloo favor'd me with a Visit.

A A, The Kidneys.

a a, The Emulgent Veins, of which that of the Right Side is Lower than the Left.

B, The Ascending Trunk of the Vena Cava Distended with Wind; the Lower Part of which is Compress'd by the Iliack Artery of the Right Side.

b, The Trunk of the Vena Cava Cut from its Entrance into the Liver and Ty'd.

C C, Parts of the Two Iliack Veins, which may be seen Distended with Wind below the Right Iliack Artery, as the Vena Cava is above; The External Iliack Veins, as well as the Crural Veins, lie immediately under the Trunks of the Arteries that Accompany them, till they Pass by the Lower Part of the Musculus Triceps and Os Femoris, to the Ham, where the Vein is Uppermost and the Artery Passes Underneath, after the same Manner the Great Trunks of Veins and Arteries do in other Parts. This Contrivance in Nature of Placing the Trunks of the Iliack and Upper Parts of the Crural Arteries on the Veins, is an Admirable Artifice to Accelerate the Ascention of the Blood to the Vena Cava and Heart, as it Arises from the Inferior Parts, by means of the Pulsation of the Arteries. If you Inject the Arteries with Wax and afterwards Fill the Veins with the same, you will see by the Figure of the Wax contain'd in the Veins, what Effect the Pulsations of the Arteries have on them, in Order to Promote the Ascention of the Resilient Blood from below. In this Compressure made by the Iliack Artery of the Right Side, on the Inferior Part of the Vena Cava its Contain'd Blood is Forc'd to Ascend towards the Heart, the Valves in the Crural Veins Opposing its Descent: By this means also the Pericardium of the Resilient Blood from below is Lessen'd, to the End its Motion may be the better Carri'd on at the Extremities of the Vessels in the Legs and Feet, and a Kind of a Pulsation made by the Vena Cava, whereby the Lymphatick Lumbal Gland R R, lying between it and the Bodies of the Vertebrae is gently Compress'd, of which hereafter.

DD, The Ascending Trunk of the Vena Cava below the Kidneys.

dd, The Iliack Arteries.

E, The Trunk of the Celiac Arteria Cut off.

F, The Trunk of the Mesenterica Superior in like Manner Cut off.

ee, The Arteries of the Testes; the Right Appearing at its Origin from the Trunk of the Arteria Magna D; the Left Passing thro' the Lumbal Gland, Q.

ff, The Spermatick Veins near their Entrance into the Trunk of the Vena Cava of the Right Side, and Emulgent Vein of the Left; where there are Valves Plac'd, which Hinder the Descent of the Blood from those Large Vessels into these Veins.

g g, The Upper Parts of the Ureters Distended with Wind;

h h, Their Lower Parts, as they Pass to the Bladder of Urine not Extended: About these Parts of the Ureters, as they Descend over the Iliack Arteries, we frequently find them Dilated by Reason of the Pulsation of those Arteries, which Prevents the free Descent of the Urine, and especially Stones and Gravel, both which often Pass them: Tho' more than once I have Seen One of the Ureters completely Obstructed by Small Stones in this Part.

i, Some Fat Remaining on the Ureter, as it Passes out of the Kidney.

G G, The Glandulae Renales or Capsulae Arrabiles in Situ.

H H, The Lower Flethy Part of the Diaphragm, which Arises from the Vertebrae of the Loins.

I, The Fissura of the Diaphragm, in which the Gula Passes to the Stomack.

K, The Bladder of Urine Distended with Wind.

L, The Uradus Turn'd down.

M M, The Musculi Psoi Magni.

N, The Sacculus Chyliferous or Receptaculum Chyli (Express A. Fig. 11.) as it Appears when Fill'd with Mercury, after freeing the Vena Cava, B, from its Accompanying the Arteria Magna, D.

O, A Large Trunk of the Vena Lactea Secundi Generis, by which the Mercury was Injected.

P, The Tube which Convey'd in the Mercury.

Q Q, The Glandula Lumbalis of the Left Side, Lying partly on the Trunk of the Arteria Magna.

R R, The Right Lumbal Gland, Lying partly under the Trunk of the Vena Cava.

S S, Some Communicant Branches of Lympheducts between the Two Lumbal Glands.

ff, The Lympheducts Arising from the Inguinal Glandules, App. Fig. 1. S S, as well as Divers other Lymphatick Glandules Lying on the Iliack Branches of Blood-Vessels (C C d d:) These Discharge all the Lympha, arising from the Inferior Parts into the Lumbal Glands, whence it Passes immediately into the Receptaculum Chyli, and is afterwards Convey'd by the Thoracick Duct (Fig. 11. M M.) into the Subclavian Vein (Fig. 12. H L:) This is the Ordinary Course of the Lympha, arising from the Inferior Parts in its Way to the Mass of Blood again. Hence it Appears, the Lympha of the Inferior Parts Meets with the Chyle in its Receptaculum, whereby the Chyle is there not only farther Dilated, but its Ascention is Accelerated towards the Subclavian Vein, by an Additional Impetus from the Ascending Lympha.

Here we can't but take Notice of a Considerable Artifice in Nature in the Disposition of these Lymphatick Lumbal Glands, whereby the Progress of the Lympha is Promoted towards the Receptaculum Chyli. As the Lympheducts Pass from the Inferior Parts, they Accompany the Trunks of the Arteries, by whose Continual Motion of Systole and Diastole, the Ascent of the Lympha is Promoted as well as the Blood; but when the Lympha Arrives at the Lumbal Glands, the Pulsation of the Ascending Trunk of the Great Artery being not sufficient (by reason those Glands are much Larger than the Exterior Surface of that Artery can give a Suitable Impulse to;) One of the Lumbal Glands R R, is Plac'd under the Vena Cava B, or between it and the Vertebrae Lumbares, by which its Vesiculae are gently Compress'd, and their Contain'd Lympha is Push'd on towards the Receptaculum Chyli.

T T, The Spermatick Vein and Artery on both Sides Involv'd in the Duplication of the Peritonaeum as they Pass towards the Testes.

Fig. 11.

The Lumbal Glandules with the Receptaculum Chyli and Part of the Thoracick Duct, &c. Fill'd with Mercury and Free'd from the Body.

A, b, The Receptaculum Chyli Compos'd of Three Trunks; One of which A, is very Large Express'd at N, Fig. 10. the other Two are much less, and lie immediately under the Trunk of the Great Artery D, Fig. 10. This Division of the Receptaculum Chyli into Three Trunks has not been taken Notice of, which Makes me Suspect the Descriptions we have hitherto had of it, have been Taken from Quadrupedes; where by Reason of its Horizontal Position, it is likely One Sacculus Chyliferous may be Sufficient; but in Men, in whom the Thoracick Duct, and Receptaculum Inclines to a Perpendicular Position, it seems to be a necessary Contrivance that it should be Divided into Three Channels (especially before it intirely Passes under the Trunk of the Great Artery) the better to Support the Chyle and Lympha in their Ascending Progress.

a, The Trunk of a Lympheduct Arising from the Diaphragm.

B, The Ductus Thoracicus above the Diaphragm, where it Passes between the Descending Trunk of the Arteria Magna and Bodies of the Vertebrae Thoracis; which Disposition of it is very necessary, to the End the Pulsation of the Artery may continually Press this Duct, and thereby Hasten the Ascent of its Contents.

C, A Trunk of One of the Vasa Lactea Secundi Generis, Express'd Fig. 10. O, by which the Mercury was Injected.

c, A Considerable Double Valve, which Hinders a Retrocession of Chyle and Lympha in this Lactal Vessel.

d, The Surface of the Left Lumbal Gland Plac'd on the Arteria Magna.

D, Another Small Trunk of the Vasa Lactea Secundi Generis, with a Small Gland of the Mesenteria, from whence it Arises.

E, The Lympheducts, which Arise from the Inferior Parts and Empty themselves into the Left Lumbal Gland.

F, The Glandula Lumbalis of the Right Side Plac'd under the Vena Cava.

G H, The Lympheducts of the Inferior Parts, which Empty themselves into the last mention'd Gland.

I, A Large Lympheduct, which Discharges its self into the Receptaculum Chyli Majus.

K L, The Communicant Branches of Lympheducts between the Right and Left Lumbal Glandules.

M M, The Thoracick Duct where its Valves, which Hinder the Descent of the Chyle and Lympha, are faintly Express'd.

N N, Divers Divisions and Inosculation of this Duct, whereby the Ascention of the Chyle may be the better Carri'd on.

O, Divers Lympheducts, which Arise from the Lymphatick Glands on the Back-parts of the Lungs, and are the Exporting Lympheducts of those Glands; their Importing Lympheducts Spring from the Lungs themselves and Adjacent Parts.

Fig. 12.

The Thoracick Duct at its Entrance into the Subclavian Vein, with its Lympheducts Injected with Wax.

A, The Thoracick Duct where it Leaves the Descending Trunk of the Arteria Magna, and Accompanying the Gula as it Passes towards the Left Side of the Bodies of the Upper Vertebrae of the Thorax, in its Way to the Subclavian Vein, where that of the Former Figure is Cut off and Ty'd.

B B, Two Lympheducts, which Sprang from the Thymus.

C, A Division and Inosculation of the Thoracick Duct.

D, A Large Lympheduct, whose Extremities Arise partly from the Thymus and partly from the Right Subclavian Gland.

E, The Left Subclavian Lymphatick Gland. The Subclavian Glands (tho' not Mention'd by any Author I know of) are Two Large Glands Plac'd under each Clavicle, and seem to be One of those Belonging to the Concatenation of Glands of the Internal Jugular Vein: They Receive their Importing Lympheducts from the Muscles of the Neck and Glands last Mention'd on the Jugular Veins, and perhaps from the Thyroid Gland.

F G, The Exporting Lympheducts of the Subclavian Gland, which Empty themselves into the Thoracick Duct.

H, The Large Trunk of the Thoracick Duct near its Entrance into the Subclavian Vein.

I, The External and Superior Part of the Subclavian Vein.

K, Part of the Axillary Vein not Fill'd with Wax from the Thoracick Duct by Reason of the Valves.

L, Parts of the Internal Jugular and Cervical Veins Cut off.

M, The Wax Injected by the Thoracick Duct Cut Transversely, with the Trunk of the Vein as it Passes towards the Heart.

Fig. 13.

A Lymphatick Gland with its Importing and Exporting Lympheducts Fill'd with Mercury.

A, The Gland whose Vesiculae are Distended with Mercury.

E, The Importing Lympheduct, by which the Mercury was Injected into the Vesiculae Glandulose;

DD, Its Ramifications before they Enter the Gland.

C C, The Ramifications of the Exporting Lympheducts, as they Arise out of the Gland and Unite in One Trunk, Call'd

B, The Exporting Lympheduct, which Passes either into the Receptaculum Chyli immediately, or Thoracick Duct, or else into another Lymphatick Gland.

Besides this Communication of Lympheducts by the Mediation of Lymphatick Glands; the Trunks of the Lympheducts themselves are frequently Inosculation with each other, and tho' they commonly Enter into the next Lymphatick Gland (where they Meet with a Fresh Supply of Lympha Separated from the Blood-vessels of the Gland, as well as an Impetus from thence) yet it sometimes Happens there is a Communicant Branch from the Importing to the Exporting Lympheduct, as Appears in the Following Figure.

Fig. 14.

A, The Gland Fill'd with Mercury as in the foregoing Figure.

C, The Importing,

B, The Exporting Lympheduct.

DD, The Communicant Branch.

Fig. 8.



Fig. 9.

Fig. 12.

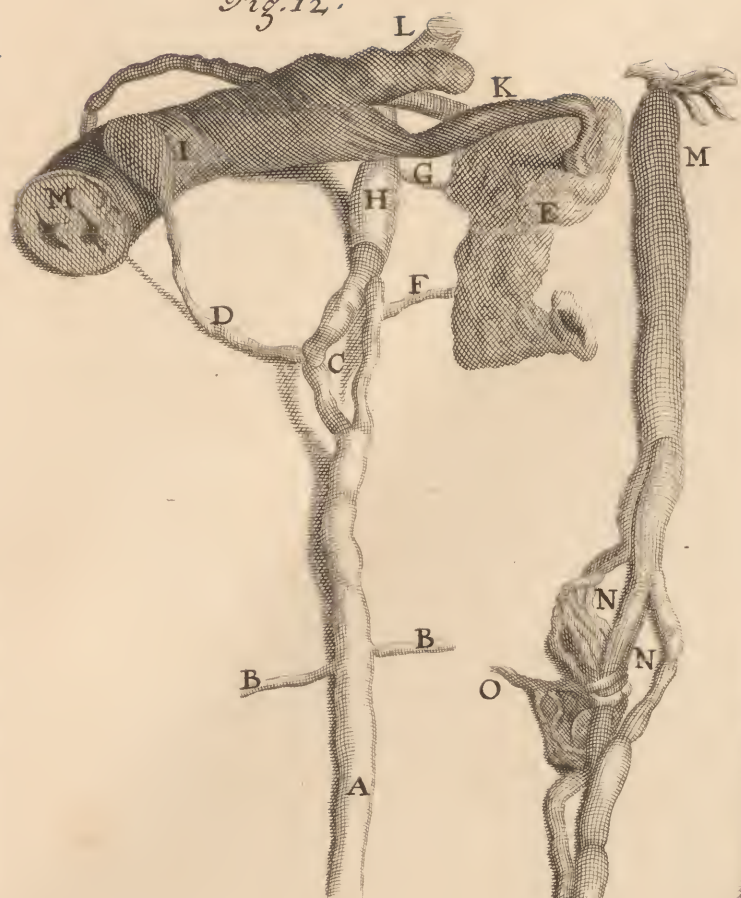


Fig. 14.



Fig. 13.



Fig. 11.

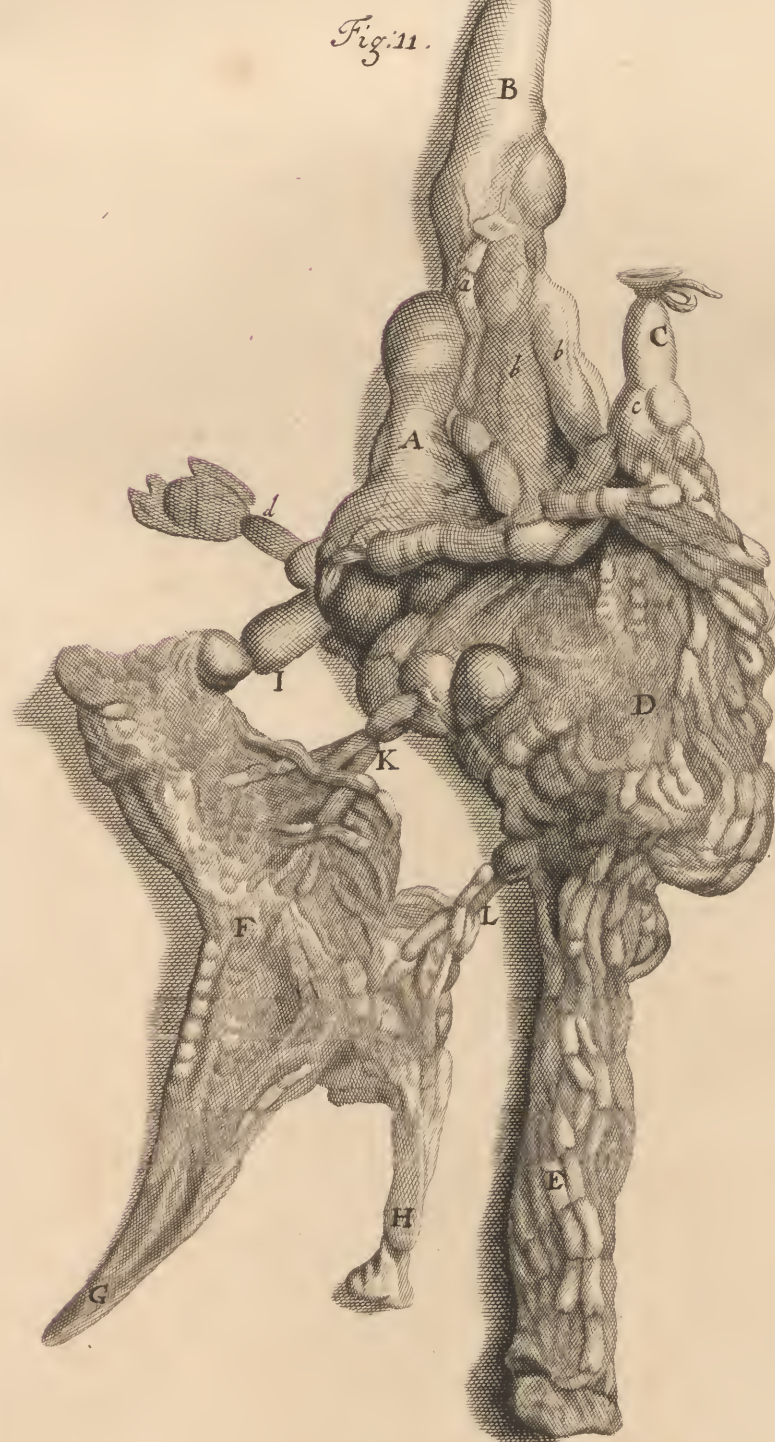
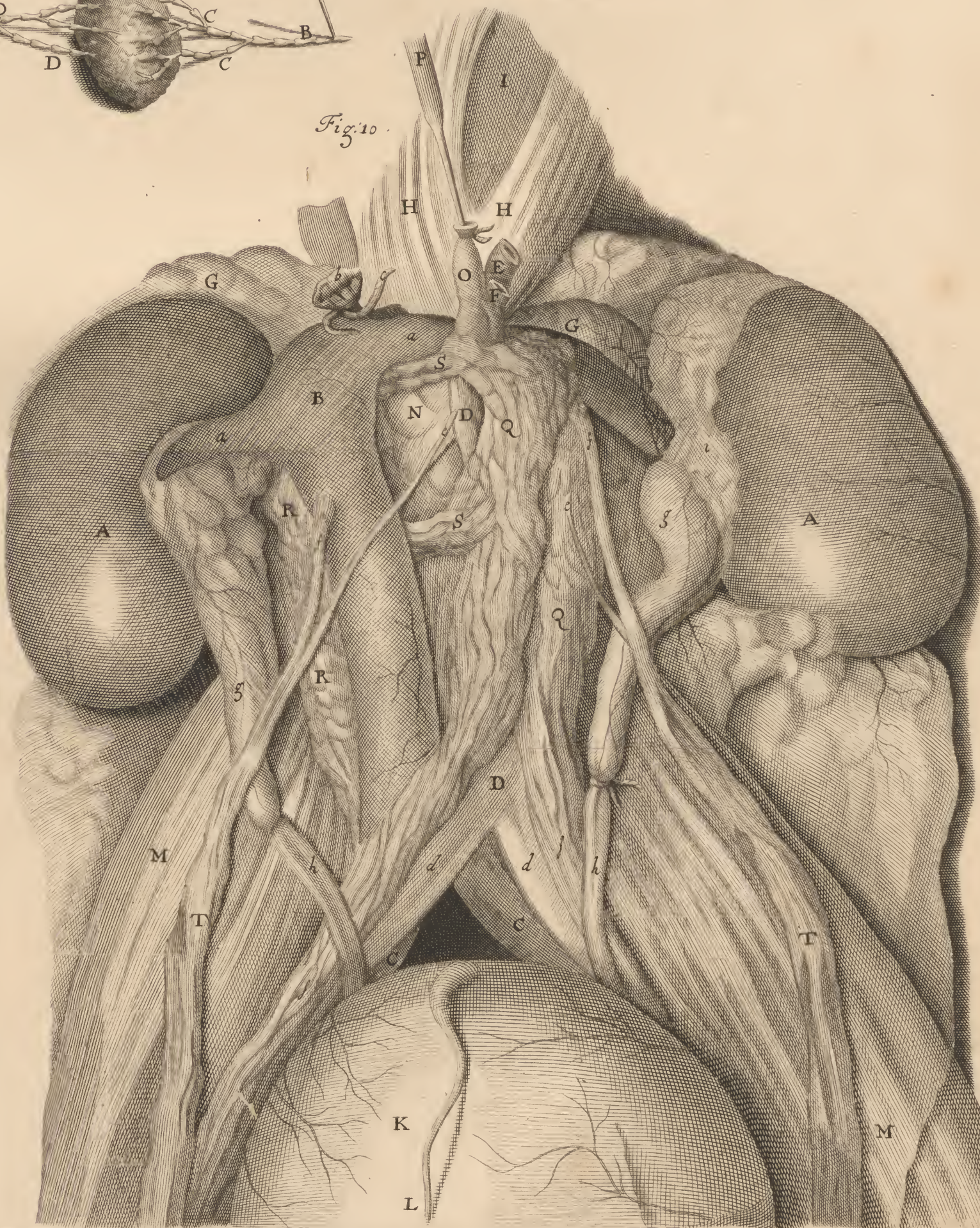


Fig. 10.







APPENDIX.

THE FIFTH TABLE.



DIVERS Parts of the Organ of Hearing of a Man.

A, The External Convex Part of the *Os Temporalis*.

B, Part of the *Os Sincipitis*.

C, The *Processus Mastoideus* Continuous with the *Os Temporalis*.

D, Part of another Process of the *Os Temporalis*, which makes the *Os Jugale*.

E, The *Processus Styloideus*.

F, Part of the *Os Temporalis*, behind which the Carotide Artery passes towards the Brain.

G, Part of the *Os Sphenoides*.

H, An Acute Process of the *Os Sphenoides*, whence the Muscles of the *Gargareum* Spring.

I, A Perforation between the *Os Sphenoides* and *Temporalis*, by which the *Ductus à Palato* passes into the Tympanum.

K, The Sixth Foramen of the *Os Sphenoides* which is near the Root of the *Processus Pterygoideus*; by which a Branch of the Fifth Pair of Nerves passes out of the Cranium. *Vid. Tab. 92. Fig. 2. Y.*

a, The Upper-part of the *Porus Auditorius* or Passage from the External Ear.

b, The Breaking off of the Bone which Composes the Lower-part of the *Meatus* or *Porus Auditorius*.

c, The *Musculus Externus Auris*, by some call'd *Laxator Externus*. This Small Muscle is plac'd under the Glandulous Membrane of the *Porus Auditorius*, which Separates that Matter call'd the *Ear-Wax*: Its Beginning is Flethy on the External Margin, at the Upper-part of the *Porus*, soon becoming Tendinous, passes to its Broad Tendinous Expansion on the External Surface of the *Membrana Tympani*. When it Acts, it draws the *Membrana Tympani* towards a Plan Outwards, together with the Handle or Long Process of the *Malleus*; by which means the Great Concussion made in the Outward Air, is Hindred from Violating the *Membrana Tympani*; which at that Time is Relaxt.

d, The Long Process of the *Malleus*, call'd its *Manubrium*, lying immediately under the *Membrana Tympani*, and is Contiguous to it.

e, The *Membrana Tympani* or Thin Transparent Membrane, commonly call'd the *Drum of the Ear*.

f, A *Sinus* in the *Os Temporalis* for the Articulation of the *Processus Condylodes* of the Lower Jaw.

g, The Conjunction of the *Os Sphenoides* with the *Os Temporalis*.

h, The Edges of the last mention'd Bones Saw'd off.

* The Suture between the *Os Temporalis* and *Sincipitis*.

Fig. 16.

The Organs of Hearing as they are made to Appear on the Internal Parts of the same Bones, Represented in the foregoing Figure.

A, The Inside of the Lower-part of the *Os Sincipitis* which lies on the Upper-part of the *Os Temporalis* next the Brain.

a, The Channels in the Bone which Receive the Blood-Vessels lying on the *Dura Mater*.

B, Part of the *Os Occipitis*.

bbb, The Conjunction of the *Os Temporalis* with the Bones of the *Sinciput* and *Occiput*, call'd *Sutura Squamosa*.

CC, The *Os Temporalis* next the Brain.

c, That Part of the *Os Temporalis* or *Processus Petrofus* of that Bone, which Touches the Anterior Appendix of the *Os Occipitis*.

d, Part of the *Os Sphenoides*.

d, That Part of the *Os Sphenoides* at the Upper-part of the *Processus Pterygoideus*.

e, Part of the *Os Jugale*.

e, The External Semicircular Duct of the *Os Petrofus* Open'd; Express'd at k, *Fig. 18.*

F, The External Surface of the *Os Petrofus*, to which the *Dura Mater* firmly Adheres.

ff, The External *Lamina* of the *Os Petrofus* cut off with a Chisel, to shew the Two Internal Muscles of the *Malleus*, Part of the Cavity of the Tympanum and the Articulation of the *Malleus* with the *Incus*, with the *Cavemula* of the *Os Petrofus* which Communicate with those of the *Processus Mastoideus*.

G, A Channel on the *Os Petrofus*, in which the Superior Long and Narrow *Sinus* of the *Dura Mater*, passes from the *Sella Turcica* to the Tortuous Part of the Lateral *Sinus*.

g, The Perforation in the *Processus Petrofus*, by which the Carotide Artery passes in a Tortuous Manner towards the *Sella Turcica* to the Brain.

H.... The Head of the *Malleus* Articulated with the *Basis* of the *Incus*.

I... The *Basis* of the *Incus* and its Short Process in *Situ*.

K... The *Musculus Obliquus* or *Semicircularis Auris*; this *Du Verruy* Describes instead of the *Laxator Externus* Express'd at c, in the preceding Figure: It is plac'd in a Proper Furrow of the Bone which is above the Bony Part of the Channel, from the Palate to the Ear, whence it Marches Obliquely to its Insertion at a Small Acute Process near the Neck of the *Malleus*: When it Acts, it draws the Handle of the *Malleus* sideways towards the *Os Jugale*; whereby it Assists the External Muscle, in making the *Membrana Tympani* capable of Relisting any great Impetus made in the Outward Air, from Injuring that Membrane.

L... The *Musculus Internus Tympani Auris*: The Flethy Part of this, like the Former, is Inclos'd within a Bony Channel of the *Os Petrofus*, lying on the Upper Side of the Bony Part of the Duct *A Palato ad Aures*, as here Express'd; when it is Advanc'd to the Upper Side of the Tympanum, it is Converted into a Small Tendon which passes out of its Bony Channel, not unlike a Rope from a Pulley, to the Opposite Part of the Tympanum, and is Fasten'd to the Long Process of the *Malleus*. This Muscle Arises from that Part of the *Os Sphenoides* that Touches the *Os Petrofus*, and Helps to of the *Aqueduct* or *Meatus à Palato ad Aures*. The Strong Frame the *Aqueduct* or *Meatus à Palato ad Aures*. The Strong Membrane which Lines the Bony Channel in which this Muscle is Entertain'd, passes out with its Tendon to the Internal Acute Process of the *Malleus*, where the preceding Muscle is Inserted. Placemets of the *Malleus*, where the preceding Muscle at its Insertion, and *sinus* seeing the Tendon of the Former Muscle at its Insertion, and not Discovering that Muscle, suppos'd it belong'd to the Muscle last mention'd, which he Describes and Figures with Double Tendinous Terminations. When this Internal Muscle of *Eustachius* Acts, it draws the Long Process of the *Malleus* towards the *Foramen Ovale* and *Rotundum*; whereby the External Surface of the *Membrana Tympani* becomes Concave, and the Membrane it self much Extended, which is Necessary when Sounds are Low.

M, The *Foramen* of the *Os Sphenoides*, by which a Branch of the Fifth Pair of Nerves, passes out of the Cranium.

N, The *Foramen* of the *Processus Petrofus* or *Os Petrofus*, by which the Auditory Nerve passes to the Organ of Hearing.

Fig. 17.

The External Surface of the *Os Temporalis* of the Right Side of a full Grown *Fetus*.

AAA, Its Superior and Anterior Margin which was Continuous to the *Os Sincipitis* and *Sphenoides*.

B, Its Posterior Part which Touches the *Os Occipitis*.

C, A Large *Foramen* by which the Blood-Vessels Enter the Bone; this *Foramen* Appears at the Root of the Mammiform Process of the Adult; which Process do's not Appear in the *Fetus*.

D, A Process of this Bone in the *Fetus* at the meeting of the *Os Sincipitis*, with the *Os Occipitis*, which is not Conspicuous in the Adult.

E, Part of the *Os Jugale* cut off.

F, The *Sinus* in which the Condylode Process of the Lower Jaw, is Receiv'd.

G, That Part of the *Os Temporalis*, call'd *Processus Petrofus*; wherein the Three Semicircular Ducts and *Cochlea* are Excavated.

H... The Long Process of the *Incus* which is Articulated to the Upper-part of the *Stapes*, by the Mediation of the *Os Orbiculare*.

I... The *Os Orbiculare* and *Stapes*, Articulated to the Extremity of the Long Process of the *Incus*.

K... The Long Process of the *Malleus* which is Connected to the Internal Surface of the *Membrana Tympani*.

By this mutual Articulation of the Four Little Bones of the Tympanum with each other, and the Connection of the Internal Surface of the *Membrana Tympani*, to the Long Process of the *Malleus*; whatever Motions are made by the Outward Air which shakes that Membrane, the *Malleus* is necessarily Mov'd, consequently the *Incus* and *Stapes*: Now the *Basis* of the *Stapes* exactly Covering the *Foramen Ovale*, the Air contain'd in the Labyrinth and *Cochlea*, is thereby necessarily Agitated, and the Effects of the Various Tremulous Motions of the *Stapes*, are Represented to the Expansions of the Auditory Nerves, in the Labyrinth and *Cochlea*.

L, The *Circulus Offens* of the *Fetus*.

M... Part of the *Cochlea* in *Situ*, Open'd.

N... The Tendon of the *Musculus Stapedis* Descending from the *Os Petrofus*, to its Implantation on the Upper-part of the *Stapes*, whereby it Draws the *Stapes* Upwards towards the *Foramen*, and Shuts it.

O, The *Stapes*.

P, The *Officulum Quatum* or *Orbiculare*.

Q, The *Musculus Stapedis* Free'd from its Bony Pipe, Excavated in the *Os Petrofus*, near the Bottom of the Tympanum. The Pipe which contains the Flethy Part of this Muscle is Less than the Sixth Part of an Inch in Length, and is much Larger than the *Foramen*, by which its Tendon passes to its Implantation in the *Stapes*.

R... The *Basis* of the *Incus* where the Head of the *Malleus* is Articulated;

S... Its Short Process which Rests on the *Os Petrofus*;

T... Its Long Process that is Articulated with the *Stapes*.

V... The Head of the *Malleus* which is Articulated with the *Incus*.

W... That Part of the Long Process of the *Malleus*, where the Internal Muscle of the Tympanum of *Eustachius* is Inserted.

X... The External Acute Process of the *Malleus*, where it Begins to Cleave to the *Membrana Tympani*;

Y... Its Internal Acute Process, to which the *Musculus Obliquus* or *Externus* of *Du Verruy*, is Implanted.

Fig. 18.

The Internal Face of the same *Os Temporalis* next the Brain, Represented in the preceding Figure

A, The Internal Concave and unequal Surface of the Bone next the *Dura Mater*.

B, Part of the *Os Jugale*.

C, The Porous Substance of the Bone as it Appears after it's cut away to shew its Cavity, call'd Tympanum.

D, The Posterior Part of the *Os Temporalis* which Touches the Occipital Bone.

E, The Extremity of the *Processus Petrofus* next the Anterior Appendix of the *Os Occipitis*.

F... The Lower-part of the *Annulus Offens*.

G... Part of the *Musculus Obliquus Auris*, left at its Insertion.

H... The Long Process or Handle of the *Malleus*.

I... Part of the *Incus* where it's Articulated with the *Malleus*.

K... The *Os Petrofus* cut away into the Cavity of the Tympanum F, G, H, I, K. The Tympanum Open'd: Besides the Membrane of the Tympanum at the Extremity of the *Meatus Auditorius*; the Cavity of the Tympanum is Lin'd with a Thin Transparent Membrane, which (I am apt to think) is also Extended on the *Malleus*, *Incus*, *Os Orbiculare*, and *Stapes*, since the Accurate *Ruyfch* has Observ'd divers Blood-Vessels on those Bones.

k, The Superior or External of the Three Semicircular Ducts Free'd from the Adjacent Part of the *Os Petrofus*, and Open'd.

l, The Middle Semicircular Duct also Clear'd and Open'd.

m... Part of the Third and most Internal Semicircular Duct also partly Open'd.

n, The *Foramen* by which the Auditory Nerve Enters the *Os Petrofus*.

Fig. 19.

The Salival Glandules of the Lower Jaw, together with those under the Tongue, Dissected.

AA, The Two Inferior Maxillary Glands, which are Represented in *Situ*, *Tab. 15. Fig. 1. MM*, Compos'd of divers Lobuli, Inclos'd in One Membrane.

BB, The *Glandule Sublinguales* Cover'd with their Common Membrane; One of which Glandules is Represented in *Situ*, in the last mention'd Table, *Fig. 2. W*.

CC, The Trunks of the Two Arteries which Spring from the Carotides, and Convey Blood into the above mention'd Salival Glands.

DD, Two Branches of Arteries, Arising from the last mention'd Trunks, which pass to the Tongue. Besides the Branches now mention'd, each of these Large Trunks sends out another considerable Branch Express'd *Tab. 12. Fig. 4. F*. which is Employ'd on the Muscles of the Face.

E, The Trunk of the Vein Arising from the Extremities of the Arteries of those Glands, and those of the Neighbouring Parts.

F, A Branch of the Fifth Pair of Nerves.

GG, The Salival Ducts of the Inferior Maxillary Glands, as they pass to their Excretory Pores at the Extremity of each *Papilla* plac'd under the Tongue.

HH, The Two *Papillae* last mention'd, where the Excretory Ducts of the Sublingual Glands also empty themselves at the same Pores with the Two Salival Ducts. This Protrusion of the Salival Ducts which Frame the *Papillae*, is a necessary Contrivance to hinder any Particle of the Masticated Aliment from Entering those Ducts, or the Excreted *Saliva* from Repassing them.

I, The Salival Duct of the Right Side Open'd according to its Length, and Expanded.

K, A Small Stone as it Appear'd lying in the above mention'd Duct: It was of a bright Yellow Colour, not unlike that of *Arum-pigmentum*. In Dissecting these Parts the Lesser End of it happen'd to Break off, as it is here Express'd.

Fig. 20.

The Internal or Back Side of the *Larynx*, with the *Aspera Arteria* and Part of the *Bronchia*.

A, The Concave Part of the *Epiglottis* as it Appears when Pin'd up.

a, Divers Small Glands at the Root of the *Epiglottis*, which are Cover'd with a Loose Membrane which makes the *Glottis*, and is Continued to that of the Inside of the Mouth, *Fauces*, and *Gula*.

BB, The Extremities of the *Os Hyoides*.

CC, The Ligaments which Fasten them to the Two Superior Long Processes of the Scutiform Cartilage.

DD, The Internal Concave Part of the Scutiform Cartilage.

b, The Two Long and Superior Processes of the Scutiform Cartilage.

c, The Superior Parts of the Arytenoidal Cartilages which

were Cover'd with the Loose Membrane above mention'd, and Compose the *Glottis*.

d, The Back-part of the Annular Cartilage.

EE, The *Musculi Cricoarytenoidei Postici* which Open the Arytenoidal Cartilages c, c, by Drawing them Backwards.

F, The *Musculus Arytenoideus* which Draws the Two Arytenoidal Cartilages nearer each other, and Streightens the *Rimula*.

G, The Cartilaginous Part of the Wind-Pipe Forewards.

H, The Posterior and Membranous Part of the Wind-Pipe next the *Gula*.

ee, Divers Small Glands which Appear on this Membranous Part of the Wind-Pipe, and Beginning of the *Bronchia*. The Excretory Ducts of these Glands, I am perswaded, Discharge themselves into the Wind-Pipe and *Bronchia*, and serve to Moistern their Cavities, and Defend them from the Inspired Air, whence Arises Part of that Moisture which is Rejected in Expiration; a great Part of it Arising also from the *Saliva*, as the Air passes the Mouth; whence it happens, less Moisture passes with the Expired Air by the *Foramina Narium* only, than when we Expire thro' the Mouth; and consequently the *Halitus* is more or less Wet, as the Mouth is more or less Open'd.

ff, The Beginning of the *Bronchia*.

The Glands above mention'd are most commonly Affected in Catarrhs, and most of those Defluents on the Wind-Pipe which cause frequent Coughing.

Fig. 21.

A Portion of the Wind-Pipe Open'd and Pin'd out to shew its Inside.

A, Its Cartilages Divided according to the Length of the Wind-Pipe.

B, Its Internal Membrane Compos'd of Longitudinal Fibres, Rais'd: This Draws the Cartilages nearer each other, and Shortens the Wind-Pipe.

CC, The Transverse Order of Fibres lying on the Membranous Part of the Wind-Pipe next the *Gula*: These Pull the Extremities of the Little Semicircular Cartilages of the Wind-Pipe nearer each other, whereby they Strengthen its Canalis.

Fig. 22.

The *Larynx* or Upper-part of the Wind-Pipe after the Scutiform Cartilage is taken off, as it Appears Laterally.

A, The *Epiglottis*;

B, Its Root cut from the Tongue.

C, The Arytenoidal Cartilage.

D, The Back-part of the Cricoidal or Annular Cartilage;

d, Its Fore-part which Appears immediately under the *Thyroides*.

E, The *Musculus Cricoarytenoideus Posticus*.

F, The *Thyroarytenoideus* Free'd from the Scutiform Cartilage, and left at its Insertion to the Arytenoidal Cartilage Laterally.

G, The *Cricoarytenoideus Lateralis*; it Arising from the *Cartilago Cricoides*, and is Inserted to the *Arytenoides*. It Assists with its Partner in Opening the *Glottis* or Arytenoidal Cartilages.

H, Parts of the Wind-Pipe.

Fig. 23.

The *Larynx* together with a Portion of the Wind-Pipe.

A, The *Epiglottis*, by which the whole *Larynx* is Suspended, which makes it Appear much longer in this than in the preceding Figure.

B, That Part of the *Epiglottis* cut from the Root of the Tongue.

CC, The Sides of the Scutiform Cartilage drawn from each other;

a, Its Superior Long Processes Tied to the Extremities of the *Os Hyoides*.

b, One of its Two Inferior Short Processes Cleaveing to the Annular Cartilage.

c, One of the Arytenoidal Cartilages (which Compose the *Rimula* of the *Larynx*.) Cover'd by the *Glottis*.

dd, The Annular Cartilage.

D, A Portion of the Wind-Pipe.

E, The Membranous Part of the Wind-Pipe which Touches the *Gula*, as it Descends to the Stomach.

e, The *Musculus Cricoarytenoideus Posticus*.

f, The *Cricoarytenoideus Lateralis*.

g, The *Thyroarytenoideus* Arising from the Internal Concave Part of the Thyroid Cartilage, and is Inserted to the Backpart of the Arytenoidal Cartilage above the Insertion of the *Cricoarytenoideus Lateralis*: This and its Companion on the other Side Acting together, Draw the Two Arytenoidal Cartilages nearer each other, and Streighten the *Rimula*: They Act in Deglutition, whereby any Part of the Aliment is effectually Hindred from Descending into the *Larynx*, by the Assistance of the *Epiglottis*, which at that Time exactly Covers the *Rimula*. These Muscles are so Strong in some, who by adequately Closing this Passage to the Wind-Pipe, can suffer Liquors pour'd into their Mouths to pass the *Gula*, without the Action of Deglutition, or the Assistance of the *Epiglottis*; as 'tis evident if they hold their Mouths Open and their Tongues Depress'd, whilst a Quantity of Liquor Descends from thence into their Stomachs.

The Use of the *Epiglottis* is to Cover the *Glottis* in Deglutition, so that the Aliment may Descend over it into the *Gula* and Stomach. Nor has the *Epiglottis* any Muscles to Depress it in that Action; but when the Tongue is Elevated, the Epiglot is necessarily Depress'd: Hence it is, when the Tongue is very much Intumesc'd (as it is frequently in those who are in great Salivations) the free Action of Deglutition is Hindred, and the Patient is necessitated to Swallow even Fluids very cautiously, and not without Difficulty, especially if the Tongue is so Distended, that it cannot be Contain'd within the Teeth.

Fig. 24.

The Upper-part of the Tongue as it Appears when taken out with its Proper Muscles.

A, The Tip of the Tongue.

B, Its Root Free'd from the *Epiglottis* and *Os Hyoides*.

a, The Vilous Nervous Bodies of the Tongue, which stand Obliquely from the Apex or Tip of the Tongue towards its Root.

b, The Glands plac'd at the Root of the Tongue, whose Excretory Pores may be seen to Open in their Middle, whence a Salivary Humour is emitted, not unlike the Glands of the *Fauces* and *Foramina Narium*, and those plac'd in the Cheeks and Lips.

CC, The *Musculi Ceratoglossi* Express'd in *Situ*, *Tab. 14. Fig. 1. DD*, on one Side.

DD, The *Styloglossi* in like Manner Express'd, *Tab. ibid. Fig. ibid. C*.

Fig. 25.

The *Vesicula Seminales* with Part of the *Vas Deferens*, and their common Duct which passes thro' the *Prostata* into the *Urethra*, Open'd.

AA, Part of the External Surface of the *Vesicula Seminales*, where the Ramifications of Blood-Vessels are Conspicuous to the Naked Eye.

B, C, The Larger Cells of the *Vesicula Seminales* and *Vas Deferens*.

D, The *Vas Deferens* Open'd.

b, c, The Lesser Cells of the *Vas Deferens* and *Vesicula Seminales* within the Larger.

E, The Place where the *Vas Deferens* and *Vesicula Seminales* Communicate with each other.

F, The common Duct of the *Vesicula Seminales* and *Vas Deferens* which passes thro' the *Glandula Prostata*, and Discharges the *Semen* into the *Urethra*.

APPENDIX.

THE SIXTH TABLE.



Fig. 26. REPRESENTS the Internal Surface of the *Basis* of the *Cranium*, with the Inferior Part of the *Dura Mater* remaining on it, done immediately after the Brain was taken out; the Blood-Vessels being first Injected with Wax.

A A, The Edges of the Skull, as they Appear when its Upper-part is Saw'd off.
 B B, Part of the *Dura Mater* lying on the *Basis* of the Skull.
 C C, The Two Lateral *Sinus*'s fill'd with Wax in their Declive and Tortuous Progress, to their Egre's at the *Basis* of the Skull.
 d d, The Two Superior Long *Sinus*'s which Communicate between the Circular *Sinus* 22, and Lateral *Sinus*'s.
 e e, Two Inferior Short *Sinus*'s, which also Discharge themselves into the Two Lateral Ones at their Egre's.
 f, The *Os Crista Galli* or Middle Process of the *Os Ethmoides* or *Cribriform*, by which the Olfactory Nerves pass to the *Foramina Narium*.
 g g, Divers Blood-Vessels of the *Dura Mater*, not Injected with Wax, by reason of their Smallness.
 h h, The First Arteries of the *Dura Mater* not fill'd with Wax.
 i i, The Second Branches of the Arteries of the *Dura Mater*: These Arise from the Carotides before they Enter the Skull, and pass thro' a small *Foramen* Reckon'd a Fifth of the *Os Sphenoides*, at the Root of an Acute Process of that Bone, whence the Muscles of the *Gargareon* Spring: After these Arteries Enter the Skull, their Larger Branches lie on the Exterior Surface of the *Dura Mater*, as Express'd Tab. 6. Fig. 1, 2, and 4, which are Entertain'd in Furrows on the Internal Surface of the *Cranium*, Express'd Tab. 9. Fig. 2. F F: As the Branches of these Arteries become still more and more Divided, and less on the Upper-part of the *Dura Mater*, so their Channels on the Top of the Skull scarce Appear; nor do any of them Enter the Longitudinal *Sinus*, as Dr. *Ridley* has well Observ'd. Besides these Branches of these Arteries which carry Blood to the *Dura Mater*, there are others also which convey Blood to the *Medullum* of the Skull A A, and do Inoculate with the Arteries of the Hairy-Scalp. The Branches of these Arteries on the *Dura Mater*, are Accompanied with Veins, which do not pass out of the *Cranium* at the same Perforation where the Arteries Enter'd, but leave them where the Inferior and Foremost Angle of the *Bregma* Touches the *Os Sphenoides* and *Temporum* Internally, and afterwards pass between the Two Internal Long Processes of the *Os Sphenoides* and *Os Frontis*, and March out at the Second Perforation of the *Os Sphenoides* or Large *Rima*, Tab. 89. Fig. 2. C D, I. Nor do the Larger Branches of these Blood-Vessels always continue their whole Progress between the Skull and *Dura Mater*, but Parts of them March in Bony Inclosures of the Skull, especially at the Inferior Angle of the *Bregma* above mention'd, and afterwards pass out again in their Usual Manner: Nor are the Perforations in the *Os Sphenoides* always Regular where these Arteries of the *Dura Mater* Enter: They sometimes Marching thro' the Sixth Perforations of the *Sphenoides*, where the Branches of the *Par Quintum Nervorum* pass out; at other times their Perforations are at the Conjunctions of the *Os Sphenoides* with the *Offa Petrofa*, between the Acute Processes of the First nam'd Bone, and Perforations of the Latter where the Carotide Arteries Enter the Skull.
 k, The Third Branch of the Arteries of the *Dura Mater* Enter the *Cranium*, where the Eighth Pair of Nerves pass out: I don't remember I ever saw any Branches of Veins Accompany these Arteries.
 Besides these Arteries of the *Dura Mater*, I don't doubt but on a diligent Search, many more may be found; and in some Subjects some of these may be wanting, especially those in whom divers Branches pass the Upper-part of the Skull near the Longitudinal Suture; of which, we commonly find Two Remarkable Ones towards the *Occiput*, as has been taken Notice of, Tab. 90. Fig. 2.
 l, The Great *Foramen* of the *Os Occipitis*, by which the *Medulla Oblongata* passes to the *Spina* in the *Vertebra*.
 m m, Some Veins of the *Dura Mater* which Communicate with the Inferior Short *Sinus*'s.
 n, Part of the *Os Jugale*.
 o o, The *Os Ethmoides* or *Cribriforme*, by which the Olfactory Nerves pass out of the *Cranium*.
 P P, The Optick Nerves cut off at their Egre's.
 q q, The Great Branches of the Carotide Arteries cut off at their Entrance into the Cavity of the Skull.
 r, One of the Nerves of the Third Pair on the Left Side, made bare from the Duplicature of the *Dura Mater*, in which it passes before it Marches out of the Skull with the following Pair.
 s s, The Fourth Pair of Nerves Free'd from the Duplicature last mention'd, and Turn' up at their passing the Second Perforation of the *Os Sphenoides* or Large *Rima*, Express'd Tab. 89. Fig. 2. between C, D, I.
 t t, The Fifth Pair of Nerves on the Right Side Expanded, before it is Divided into Three Branches, on the contrary Side its Trunk is Whole. *Vid. Fig. 27.*
 V, The Upper and Foremost Branch of the Fifth Pair of Nerves on the Left Side, before it passes out of the Skull at the Second Perforation of the *Os Sphenoides*, with the Third, Fourth, and Sixth Pair of Nerves.
 w, The Nerve of the Sixth Pair on the Left Side Free'd from the Duplicature of the *Dura Mater*; in which it is Inclos'd at a considerable Distance before it Accompanies the Third, Fourth, and Foremost Branch of the Fifth Pair of Nerves at its Egre's.
 x, The Intercostal Nerve of the Left Side, Compos'd of Two Branches from the Fifth Nerve, and joining with the Body of the Sixth in this Subject, whether this Disposition is Constant, I must confess my late Enquiries have not afforded me an Opportunity of Observing.
 y, The Two Branches of the Fifth Pair of Nerves which Help to Compose the Intercostal Nerve.
 z z, The Contortion of the Carotide Artery Collateral to the *Sella Turcica*.
 1, 1, The *Glandula Pituitaria* lying in the *Sella Turcica*.
 2, 2, The Circular *Sinus* or Vein Environing the Pituitary Gland, and was First taken Notice of by Dr. *Ridley*.
 3, The *Infundibulum* in whose Infide, I conceive, the Trunks of Exporting Lympheducts pass from the Pituitary Gland; besides which, the Inmost Cavity of the *Infundibulum* it self Transmits the Aqueous Humour of the Ventricles of the Brain into the Pituitary Gland, where it joins with the *Lympha* above mention'd.
 4, 4, Two Arteries taken Notice of by *Viesjens*, which pass out of the *Cranium* to the Glandulous Membranes of the *Foramina Narium* and Neighbouring Parts.
 5, 5, The Bended Parts of the Lateral *Sinus*'s as they pass that Part of the *Cranium*, where the *Os Temporum*, *Sincipitis*, and *Occipitis* meet.
 6, Part of the *Dura Mater* Rais'd and Reclin'd Laterally, to shew the Progress of the Third, Fourth, Fifth, and Sixth Pair of Nerves.

7, 7, The Hard and Soft Trunks of the Auditory Nerves Entering the *Os Petrosum*.
 8, 8, The Eighth Pair of Nerves or *Par Vagum*, together with the Accessory Nerves (x x) Accompanying them at their Egre's.
 x x, The Accessory Nerves.
 9, 9, The Ninth Pair of Nerves.

Fig. 27. The Trunk and Three Branches at One of the Nerves of the Fifth Pair within the *Cranium*.
 A, The Trunk,
 B, Its Ganglion,
 C, Its Foremost Branch Express'd at V, in the preceding Figure, passing out of the Skull at the Second Perforation of the *Os Sphenoides*.
 D, Its Middle Branch somewhat less than the other Two, which passes out at a distinct *Foramen* of the *Os Sphenoides*, Collateral to the *Sella Turcica*, and is Reckon'd the Third *Foramen* of that Bone, Express'd Tab. 89. Fig. 2.
 E, The Third Branch of this Nerve, which passes the Sixth Perforation of the *Sphenoides*.

Fig. 28. The *Basis* of the Brain with the Large Trunks of its Blood-Vessels of both Kinds Injected with Wax, some of their Ramifications being clear'd of the *Pia Mater*, together with the Ten Pair of Nerves of the Brain, and a Portion of the *Medulla Spinalis*, &c.
 A A, The Foremost,
 B B, The Hindmost Lobes of the Brain.
 C C, The *Cerebellum* which in this Subject was very Large.
 D D, The Two Lateral *Sinus*'s cut off after their Declive and Tortuous Progress, Express'd in the First of the Two precedent Figures C C, 55.
 E E, The Trunks of the Vertebral Arteries as they pass the Transverse Processes of the First *Vertebra* of the Neck, in their Tortuous Progress thro' the Great *Foramen* of the *Os Occipitis*, to the *Medulla Oblongata* and Brain. *Vid. Append. Fig. 8. K K.*
 F, The Vertebral *Sinus* or Large Vein, in whose External Membrane the Wax is Extravast, which makes it Appear with an Unequal Surface, as here Express'd.
 G G G G, A Continuation of the *Dura Mater* Divided according to its Length; One Side lying on the *Medulla Spinalis*, the other being Rais'd and Pinn'd out.
 a, A *Foramen* to whose Margin the Upper Broad Part of the *Infundibulum* is Fasten'd, and Opens into it, inasmuch that if you take out the Brain with the *Infundibulum* remaining to it, and Insert a Blow-Pipe into the Fourth Ventricle, you may thereby not only Distend that and the Two Lateral Ventricles with Wind, but you will also see the *Infundibulum* Rise and be Distended also.
 b b, Two White Protuberances behind the *Infundibulum*.
 C C, Two Large Branches of the Carotide Arteries cut off, before they pass between the Foremost and Hinder Lobes of the Brain.
 d d, Two Communicant Branches between the Carotide and Cervical Arteries, by which the Latter chiefly became fill'd with Wax, it being Injected into One of the Trunks of the Carotide Arteries only of One Side: Hence we may be Inform'd, not only of the Inoculations of the Large Branches of the Carotide Artery of the Right Side with those of the Left, but of their Communications also with the Vertebral Arteries, as they pass the Transverse Processes of the *Vertebra*; the Wax in such an Injection pouring out by the Vertebrals; as I have had occasion more than once to Observe by Injecting these Arteries as above mention'd, after the Head together with the *Vertebra* of the Neck have been taken from the Body.
 e e e, Two Large Branches of the Cervical Artery sometimes seeming as tho' they came from the Communicant Branches; from the Foremost of these chiefly Spring the Arteries of the *Plexus Choroideus*; from the Two Hindmost Arise those Branches which go to the Choroicid *Plexus* of the Fourth Ventricle of the Brain.
 f, Two Little Branches of the Carotides.
 h h, The Two Trunks of the Vertebral Arteries which Compose the Cervical.
 g, The Cervical Artery.
 i i, The Spinal Artery which by reason of the Retrograde Motion of the Wax, or some Coagulated Blood in it near the Vertebral Artery, was not fill'd with Wax as the rest.
 k, A Small Branch of an Artery Running between the *Fasciculi* of the Nerve of the Ninth Pair, on the Right Side near their Originals.
 l l, Parts of the *Crua Medulle Oblongate*, immediately before they meet at their Conjunction under the *Pons Varolii*.
 m m, The Annular Protuberance or *Pons Varolii*.
 n, That Part of the *Caudex Medullaris* or *Medulla Oblongata* on the Right Side, call'd by *Willis* and *Viesjens*, *Corpora Pyramidalia*.
 o, That Part on the same Side, call'd *Corpus Olfactorie*.
 p, A Branch of the Carotide Arteries which Divide the Two Anterior Lobes of the Brain from each other; from whence Spring some Small Branches which Accompany the Olfactory Nerves at their Egre's by the *Os Cribriforme*, Fig. 26. 4, 4.
 q q, Little Branches from the Cervical Arteries which Run under the *Pia Mater* that Covers this Part, and sometimes pass further to the *Plexus Choroideus* in the Fourth Ventricle, and *Cerebellum*.
 r r r r, Other Branches passing into the Annular Protuberance.
 s s, The Two First Medullary Processes of the *Cerebellum* which are continued to the *Protuberantia Annularis*, and seem to Compose Part of it: The Two Second Processes of the Cerebel Express'd Tab. 10. Fig. 1. S S.
 t t, The Veins on the *Cerebellum* which pass according to its *Sulci* or External Furrows which Vary very much in their Progress from those of the Brain it self.
 v v v, Other Veins Variouslly Distributed on the Cerebel which Empty themselves into the Lateral *Sinus*'s.
 w w, The *Sulci* of the Brain, in which large Branches of Veins and sometimes Arteries may be seen.
 x x x, Their Capillary Branches as they Appear under the *Pia Mater* on the External Cortical Surface of the Brain.
 1, 2, 3, 4, 5, &c. The Ten Pair of Nerves of the Brain, with Seven of those of the Spinal Marrow.
 1, 1, The First Pair of Nerves of the Brain, call'd *Par Olfactorium*, they are much Larger in Brutes, and are Hollow; which Hollownesses Communicate with the Ventricles of their Brains, but do not Appear so in Humane Bodies. They are call'd *Processus Mamillares*, from their Appearance in Quadrupedes. By the utmost Scrutiny that Exact Anatomizer of these Parts, Dr. *Ridley* and my self could make, we never Discover'd but One Original to each of these Nerves; which is from the Under and Foremost Part of the *Crua Medulla Oblongata*, whence they pass in an Oblique Manner for some Space be-

tween the Fore and Hindmost Lobes of the Brain, and March out from thence as Appear in the Figure: As they pass thro' the *Os Ethmoides* (o o, Fig. 26.) these Medullary Bodies are Converted into as many Nervous *Fasciculi*, as there are Perforations in that Bone, which are afterwards Expanded on the Glandulous Membrane that Invests the *Foramina Narium*.
 2, 2, The Second Pair of Nerves, call'd *Optici*, or Seeing Nerves: These Arise from the Two Large Medullary Protuberances of the Brain, call'd *Thalami Nervorum Opticorum*, Express'd in the following Table, c c, Fig. 30. and passing over the *Crua Medulle Oblongate*, March to their Conjunction here Express'd x; after parting from each other again, they soon pass the First *Foramina* of the *Os Sphenoides* P P, *App. Fig. 26.* where the Great Branches of the Carotide Arteries lie Contiguous to them; whence it happens in any great *Plethora* (as after plentiful Drinking or the like) these Arteries by reason of their Turgescence, so Press on the Optick Nerves, as to Distort the Course of their Fibres, and make Objects seem Disorder'd. Some Branches of the Blood-Vessels are Visible to the Naked Eye as they pass thro' the Bodies of those Nerves, and are Conspicuous also on their Expansions within the Bulb of the Eyes, which Compose the *Tunica Retinae*.
 3, 3, The Third Pair of Nerves passing out between the Two Branches of the Cervical Artery e e e; these Arise from the Upper and Fore-part of the Annular Process, where the *Crua Medulle Oblongate* meet: Nor do the Beginnings of these Nerves Appear till the Blood-Vessels above mention'd and *Pia Mater* are remov'd: They Enter the Duplicature of the *Dura Mater* on each Side the Pituitary Gland, as Express'd Tab. 9. Fig. 3. H H, and pass out of the Skull with the following Nerves, to the Muscles of the Eyes, wherefore these are call'd *Par Oculorum Motorium*.
 5, 4, The Fourth Pair of Nerves of the Brain as they Appear after their Progress between the *Cerebrum* and *Cerebellum*: They Arise Remote from their Appearance in this Figure, even at the Back-Side of the *Medulla Oblongata*, Tab. 10. Fig. 1. v v. In taking out the Brain you'll find them under the Fore-part of the Second Process of the *Dura Mater* near the *Sella Turcica*: They March into the Duplicature of the *Dura Mater* immediately under the Foremost, and pass the Second *Foramen* of the *Os Sphenoides* with them into the *Orbita Oculi*: They are call'd *Par Patheticum*, either because some Branches of them pass to the Oblique Muscles of the Eye, or that considerable Branches (if not their Whole Trunks) pass the *Trochlea Cartilages* of the Eyes.
 5, 5, The Fifth Pair are very Large in their Originals, at the Upper and Lateral Part of the *Processus Annularis*, near the *Pedunculus* or Second Process of the *Cerebellum*. In taking out the Brain from the *Basis* of the Skull, you'll find these Nerves immediately under the Pathetic: Nor can you well see them to cut them off (in this Operation) unless you First Divide the Second Process of the *Dura Mater*, where it's Fasten'd to the Extremity of the Inner Process of the *Os Petrosum*: After they pass over the Extremity of the last mention'd Process they Frame Ganglions, and each is Divided into Three Branches Represented in the preceding Figure.
 6, 6, The Sixth Pair of Nerves are about the Bigness of the Third, and Arise from the Hinder-part of the Annular Process, not far from the *Basis* of the *Corpora Pyramidalia*; as they pass on the Annular Protuberance, some Branches of the Cervical Artery run over them: They Enter the Duplicature of the *Dura Mater* below the Former. *Vid. Tab. 9. Fig. 3. N N*, and pass over the Extremity of the Internal Process of the *Petrosum* with the Former, as is Represented Fig. 26. w.
 7, 7, The Seventh Pair are the Auditory or Hearing Nerves, each of which are Compos'd of Two Nerves; the One being Hard, the other Soft, which have Distinct Originals: The Former or Hard Trunk Springing from the *Medulla Oblongata*; the Latter or Softer Arising very Remote from it, being continu'd from divers Bright Medullary Fibres that Appear in the Fourth Ventricle of the Brain, whence they Creep on the Sides of the *Caudex Medullaris*, till they meet with the Harder Trunk, which they Accompany to the *Offa Petrofa*, Fig. 26. 7, 7. The Soft Nerves being Expanded within the Labyrinths and Cochleas of the Organs of Hearing; whilst the Hard Trunks pass thro' the Bone, and Expand themselves in a Larger Field, as the Accurate *Viesjens* Represents them.
 8, 8, The Eighth Pair of Nerves or *Par Vagum*; each of these have Ten or Twelve Nervous *Fibrille* Springing from the *Medulla Oblongata*, immediately below the Annular Process m m, and under the *Corpora Olfactoria* o o, or between them and the Third or Cordal Processes of the *Cerebellum*, Tab. 10. Fig. 1. W W, whence they March Accompanied with divers Small Blood-Vessels of both Kinds, to their Egre's with the Lateral *Sinus*'s 8, 8, Fig. 26. where they meet with the Spinal Accessory Nerves ** which go out with them, and are Distributed as *Viesjens* has Express'd them.
 9, 9, The Ninth Pair of Nerves, whose Various Originals of the Right Side differ from those of the Left: They continue to derive their Beginnings at Various Distances from the Upper-parts of the *Corpora Olfactoria*, to Half an Inch in Length on the *Caudex Medullaris*; some of the Fibres of that on the Left Side, passing over the Vertebral Artery of the same Side, when those of the contrary Side pass from under it: After passing a short Space, these Nervous Fibres Collectively pass the Third Perforation of the *Os Occipitis*. *Vid. Fig. 26. 9, 9. Tab. 9. Fig. 3. R R. Tab. 90. Fig. 3. E.*
 k, A Small Branch of the Vertebral Artery which I have seen Injected with Wax, and pass out with One of these Nerves.
 * The Spinal Accessory Nerves as they Ascend from under the Vertebral Arteries to the *Par Vagum*: They Arise much Lower from the *Medulla Spinalis* than *Viesjens* describes them, even from the Foremost and Hindmost Beginnings of the Seventh Pair of Nerves of the Neck (16) and in their Collateral Ascent to the Spinal Marrow, they still receive New Roots from all the Nervous Origins they pass by, except those of the Ninth Pair of the Brain.
 10, The Tenth Pair of Nerves of the Brain on One Side, or more properly the First of the Neck, which pass out between the First *Vertebra* of the Neck and the *Os Occipitis*.
 11, 12, 13, 14, 15, 16, 17, The rest of the Nerves of the Neck, which pass out between the *Vertebra* successively.
 Fig. 29.
 A A, Part of the *Cerebellum*.
 a a, Its Second Processes which Help to Compose the Annular Protuberance.
 B B, The *Crua Medulle Oblongate* cut off from the Brain.
 C C, The Annular Process Divided thro' its Middle, its External Surface (m m, in the preceding Figure) being cut off with a Razor, or large sharp Knife.
 b b, The Cineritious and Medullary *Striae* which Appear in this Section of the Annular Protuberance.
 c, The Middle Medullary Tract to which the Lateral *Striae* run.
 d d, The Cineritious Part of the *Medulla Oblongata* under the *Corpora Pyramidalia*: In this Section the *Corpora Olfactoria* are Divided.
 e, The Left Chordal Process partly in *Sim.*

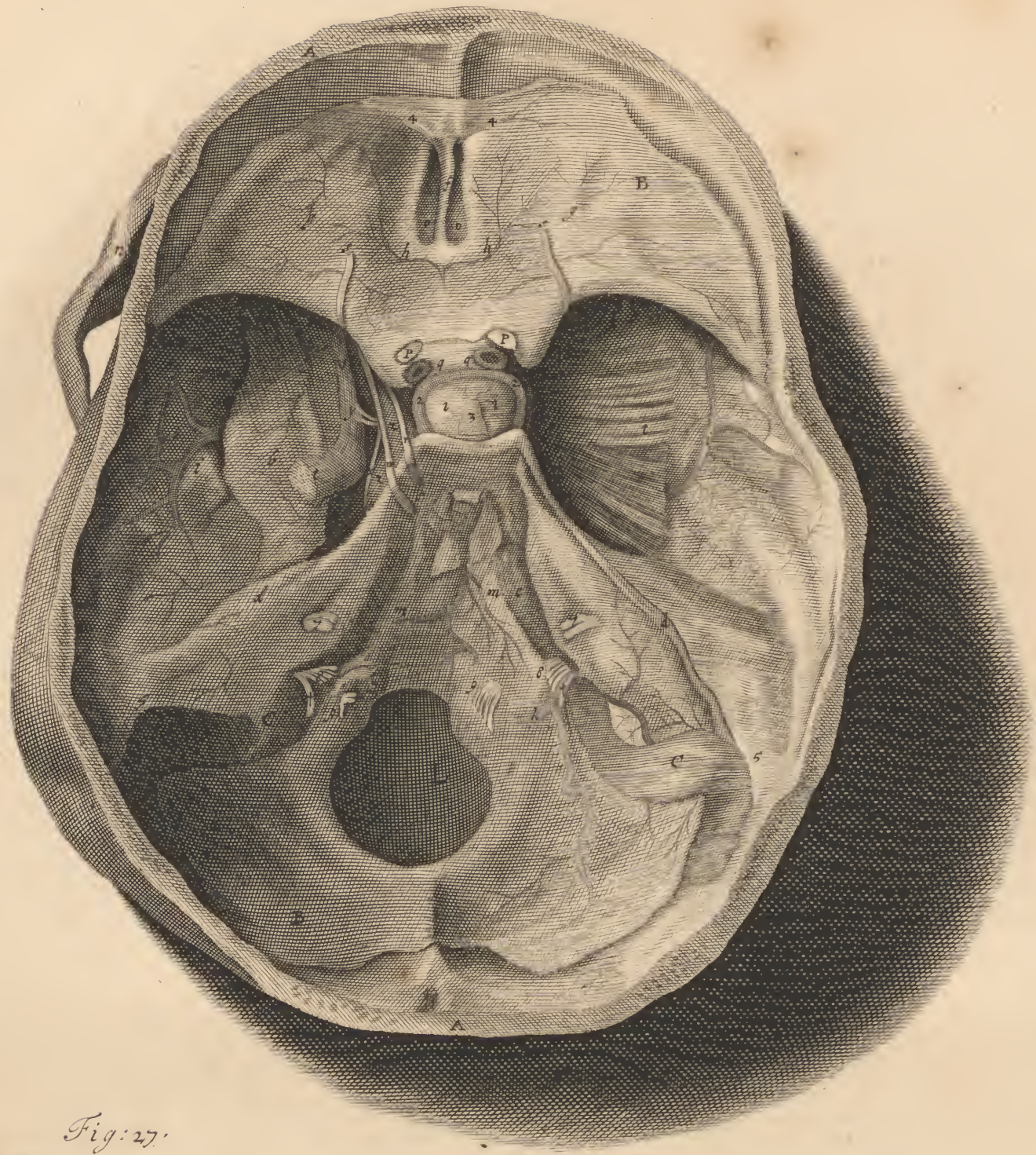


Fig: 27.



Fig: 28.

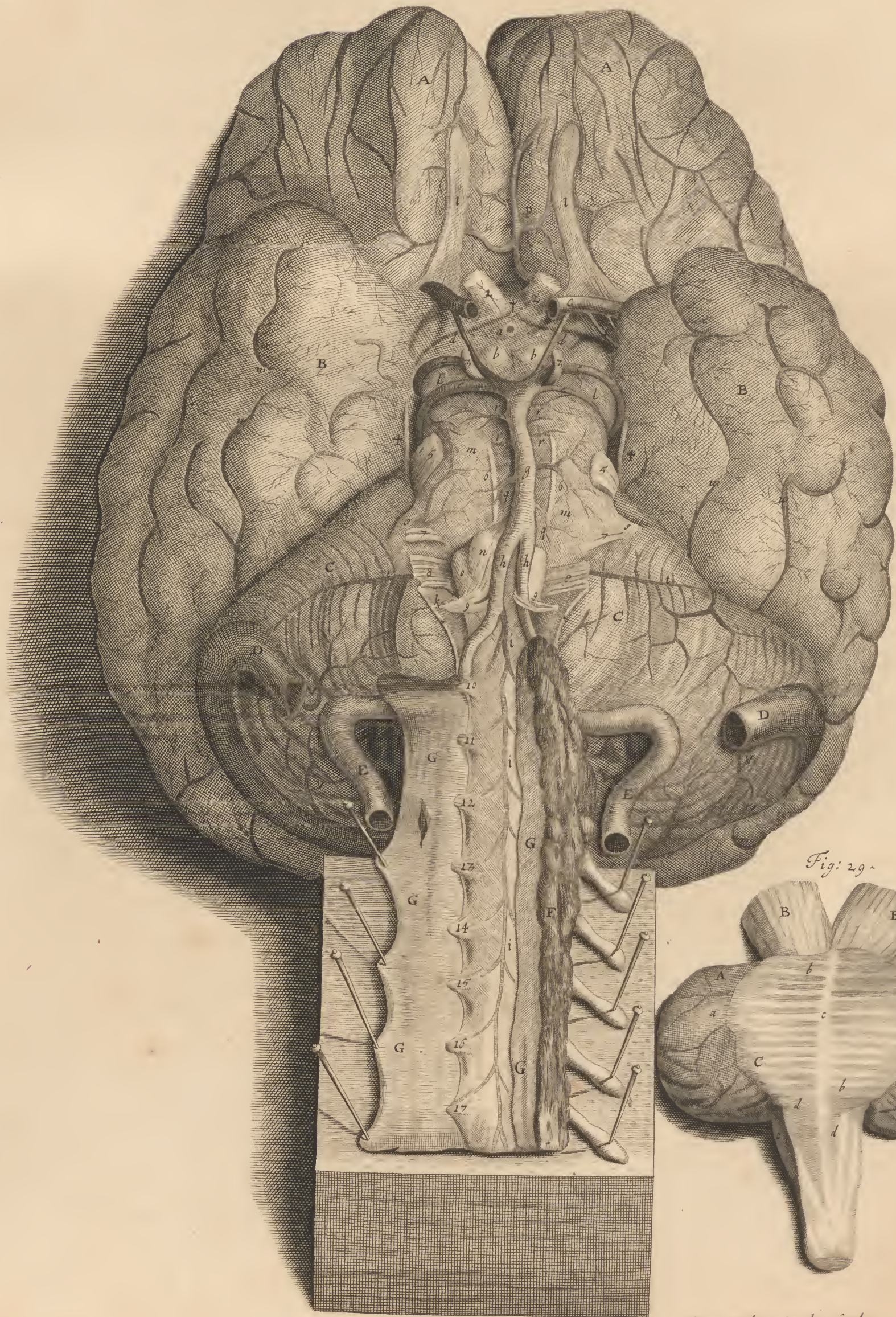
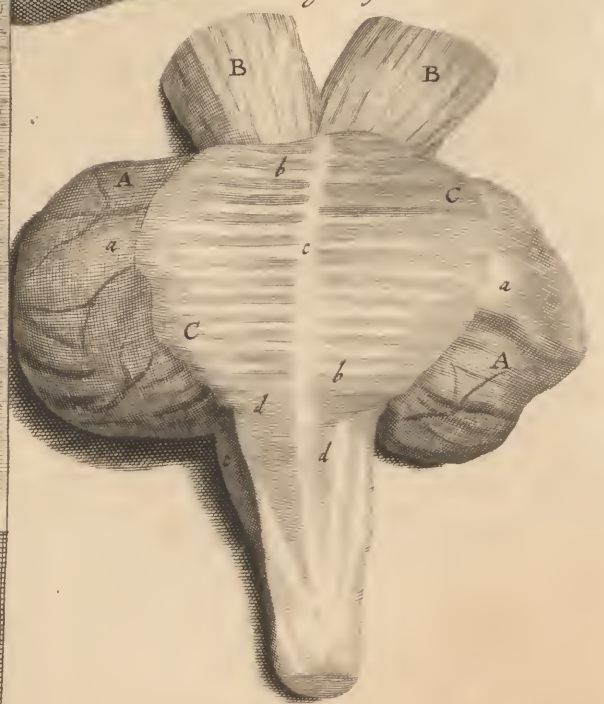


Fig: 29.



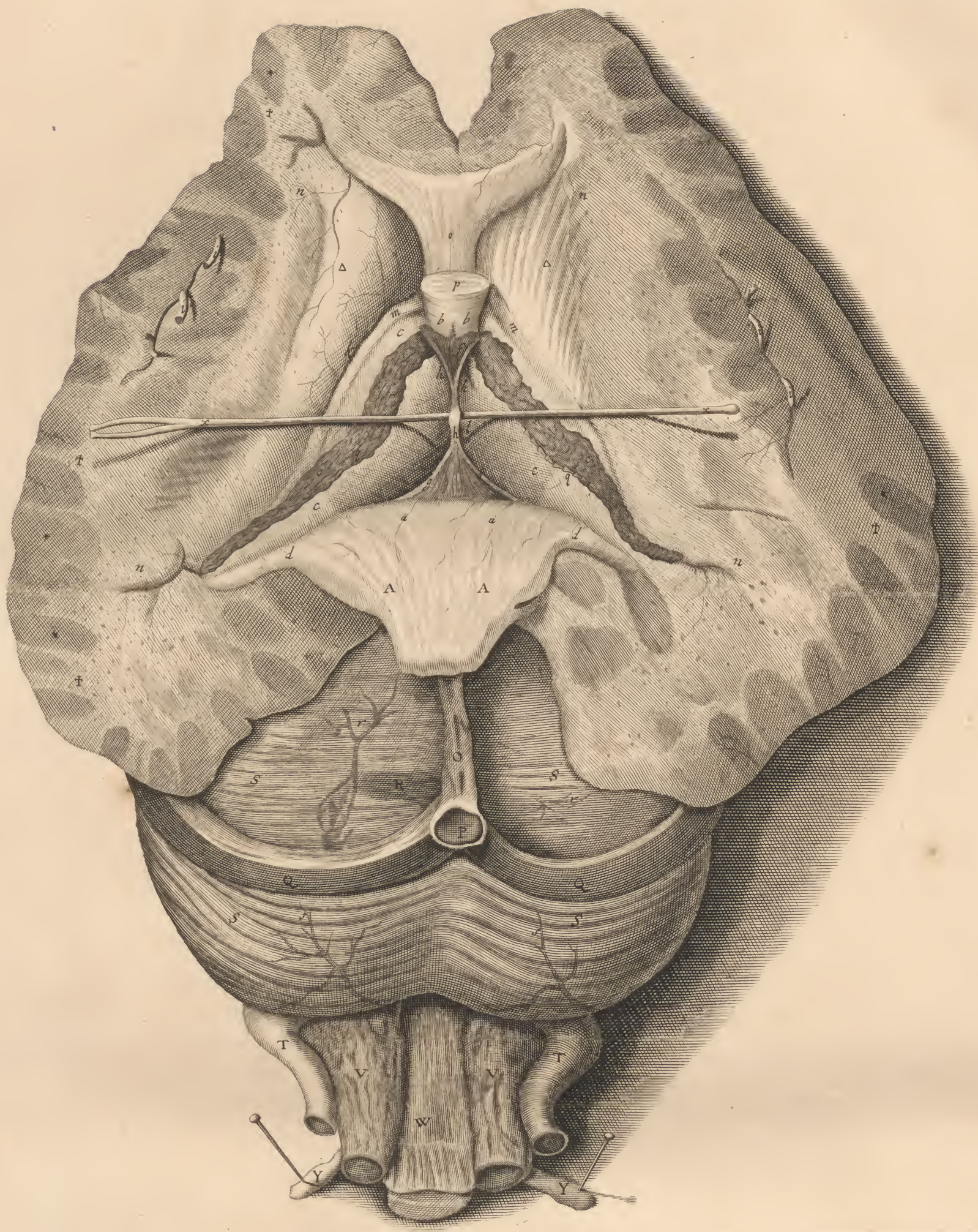


Fig: 32.

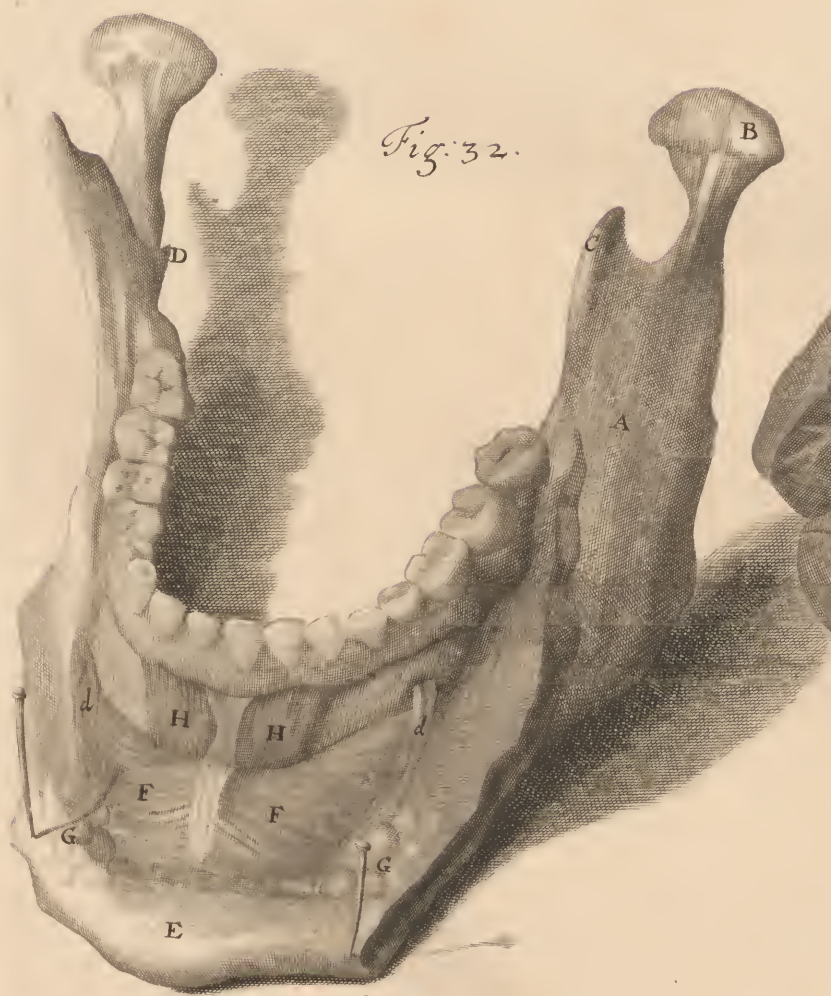
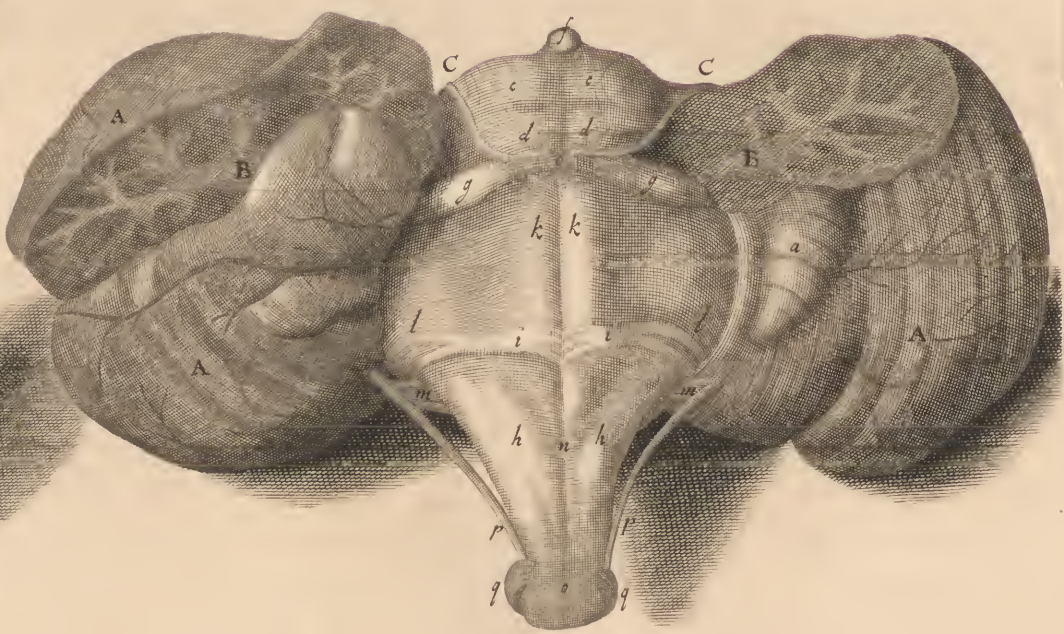


Fig: 31.



APPENDIX.

THE SEVENTH TABLE.

THE Brain lying on its *Basis* after its Two Hemispheres are cut off, and the Blood-Vessels Injected with Wax; the *Cerebellum* remaining intire.

AA, The Inferior Part of the *Fornix* as it Appears when cut from its Roots *b, b.* and turn'd Back, with Part of the *Corpus Callosum* remaining on it.

aa, The Blood-Vessels that Appear on this Inferior Surface of the *Fornix*.

bb, The Roots of the *Fornix*.

cc, The *Thalami Nervorum Opticorum* or Beginnings of the Optick Nerves.

ΔΔ, The *Corpora Striata*; that of the Left Side remaining Whole; the Right being Divided to shew its *Stria*.

dd, The *Crura Fornicis* where they begin to Wind down on the Sides of the *Crura Medullæ Oblongatæ*: These *Crura* of the *Fornix* are call'd *Hyppocampi* or *Bombycini*.

ee, The *Plexus Choroïdes* whose Arteries Arise from the First Branches of the Cervical Artery *ee*, *Appen. Fig. 28.*

f, The Meeting of the *Plexus* at the Root of the *Fornix*, where its Two Veins pass to its other Part *gg*.

gg, The other Part of the *Plexus Choroïdes*, whose Arteries Spring from the Second Branches of the Cervical Artery, join'd with the First by Communicant Branches; which do not Appear here, by reason they lie under the *Crura Fornicis* *dd*.

hh, Two Veins which Arise from the Upper-parts of the *Plexus Choroïdes*, and pass the Third Ventricle to the other Part of the same *Plexus* *gg*, near the *Nates* and *Testes*.

iiiiii, The Branches of the Carotide Arteries cut off, as they Appear Injected with Wax, and passing between the Cortical Foldings of the Brain.

k, A Branch of a Vein which passes according to the Length of the *Corpus Striatum* of the Left Side, and Discharges its Blood into the Veins of the *Plexus Choroïdes*; that of the Right Side being taken away to shew the *Stria*.

l, Part of the *Rima* of the Third Ventricle that do's somewhat Appear under the Vein, *h*.

m, A long Medullary Tract between the *Corpus Striatum* and *Thalamus Nervi Optici*, call'd by Dr. *Willis*, *Processus Medullaris Transversus*.

nnnn, The *Centrum Ovale* of *Vieussens*.

o, That Part of the *Corpus Callosum* by *Vieussens*, call'd *Fornix Vera*, between which, and the *Fornix* *p*, is plac'd the *Septum Lucidum*, Dividing the Fore-part of the Right Ventricle of the Brain from the Left. This *Septum* by some call'd *Speculum*, is a Continuation of the Inward Membrane which Invests the Two Superior Ventricles, meeting in their Upper-parts not unlike the *Pleura* on the *Sternum*, where it Composes the *Mediastinum*, and Divides the Cavity of the *Thorax*. In the Upper-part of this *Septum* I have more than once seen its Duplication fill'd with a Watrish Humour in Hydriopick Brains, as *Vieussens* also takes Notice.

o, The Fourth *Sinus* of the *Dura Mater* fill'd with Wax.

p, The Longitudinal *Sinus* cut off, where it meets the Fourth and Two Lateral *Sinus's*, call'd *Torcular Herophili*.

qq, The Two Lateral *Sinus's* also Extended with Wax.

r, A Vein fill'd with Wax on the Second Process of the *Dura Mater*.

r, Some Branches of Veins as they Appear on the Second Process of the *Dura Mater*.

p, The *Fornix* cut off near its Two Roots.

qq, Some Lympheducts on the *Plexus Choroïdes* which Accompany the Vein *hh*, in their Way to the *Glandula Pinialis* not seen in this Figure; that Gland being plac'd under the *Fornix* *A, a*, with the *Nates* and *Testes*, as is Express'd *Tab. 10. Fig. 1. Q, O, O, P, P.*

These Lympheducts perhaps were seen by that Accurate Anatomist *Monf. Beddevold*, in Examining an Ox's Brain; of which he Communicated an Account to the Accurate *Nuck*, as *Monf. Beddevold* himself told me, and Appears in an Epistle at the End of *Nuck's Adenographia Curiosa. Vidi*, says he, *Lymphaticum in Cerebro Bivino, quod examine tuo (ut Originem scias & Insertionem) erit Dignissimum. Non longe à Glandula Pineali, à qua Ramos forte habet, incumbit Plexui Choroideo ad Infundibuli latera sese extendens.*

SSSS, The *Cerebellum* Cover'd with the Second Process of the *Dura Mater* in its Upper-part, and the *Dura Mater* it self on the Hinder-part.

ff, Some Branches of Veins which Appear fill'd with Blood on the *Dura Mater*, Covering the Back-part of the *Cerebellum*; which vary in their Course from those Subjacent Vessels on the *Pia Mater*, which are immediately Distributed on the *Cerebellum* it self, and faintly Appear in those Strokes running somewhat Parallel with the Lateral *Sinus's*.

TT, Parts of the Vertebral Arteries.

VV, The Vertebral *Sinus's* on which the Wax Appears Extravast, as in *Fig. 28. F.*

W, The Back-part of the *Medulla Oblongata* Cover'd with the *Dura Mater*.

xx, A Probe Supporting the large Veins of the *Plexus Choroïdes* in the Third Ventricle of the Brain.

††† The Medullary;

******* The Cineritious Part of the Brain.

Fig. 31.

The Back-part of the *Cerebellum* cut thro' its Hinder-part and Reclin'd Laterally; together with a Portion of the *Medulla Spinalis*.

AAA, The *Cerebellum* Cover'd with the *Pia Mater* only, where its Circular *Sulci* in which its Large Blood-Vessels pass, are Express'd, together with divers Arborious Ramifications of Blood-Vessels, which Decussate those of its *Sulci* as they March under the *Pia Mater*.

B B, The Branching of the Medullary Part of the *Cerebellum*, as it Appears when Divided.

a, The Vermicular Process on the Back-part of the *Cerebellum*.

CC, The Two Pathetick Nerves near their Origin.

cc, The *Nates*;

dd, The *Testes*, in whose Surfaces the Blood-Vessels Appear Distributed under the *Pia Mater*.

f, The *Glandula Pinialis* which we take to be a Lymphatick Gland, Receiving *Lympha* from the Lympheducts of the *Plexus Choroïdes*, and Discharges it into Exporting Lympheducts which pass the Third Ventricle of the Brain, to the *Infundibulum* and *Glandula Pituitaria*; the Manner we Conceive these Lympheducts pass the *Infundibulum*, is on its Internal Surface, and so pierce the Pituitary Gland; it being unusual in the Practice of Nature for Lympheducts before they Arrive at the *Receptaculum Chyli* to Discharge their Contents in large Cisterns, to be again transmitted by narrow Conduits to the Thoracick-duct, as it must do, if as some Conceive, the *Infundibulum* it self is a meer Lympheduct, which in some measure I am apt to think with Dr. *Ridley* it do's; as I have already intimated, *Append. Fig. 26. 3.*

gg, The First Process of the *Cerebellum* which pass towards the *Nates*.

e, The Transverse Process which Unite the Two First Processes of the *Cerebellum*, whence the Pathetick Nerves take their Rise.

hh, The Third, or Cordal Process Arising from the *Cerebellum*, and Descend on both Sides the *Medulla Oblongata*.

ii, Some Bright *Stria* which Appear in the Fourth Ventricle of the Brain, and Help to Compose the Medullary Trunks of the Auditory Nerves; these sometimes have Various Originals from the Upper-part of the Fourth Ventricle; at other Times some of these *Stria* Arise Lower than here Express'd.

k k, l l, n, The Fourth Ventricle Open'd and Expanded.

o, The Beginning of the *Medulla Spinalis*.

pp, The Accessary Nerves.

qq, Those Parts of the Tenth Pair of Nerves which Arise from the Back-part of the *Medulla Spinalis*.

m m, Parts of the Eighth Pair of Nerves where they meet the Accessary Nerves.

Fig. 32.

The Lower Jaw with some of the Muscles of the Under Lip remaining to it.

A, The External Left Side of the Bone made bare.

B, The *Processus Condyliformis*.

C, The *Processus Corone*.

D, An Acute Process, on the Internal Part of the Lower Jaw beyond the *Dentes Mollares*, under which the Trunks of Nerves and Blood-Vessels pass into the *Medullium* of the Bone, and give Branches to each Tooth.

d, Some Branches of the same Nerves and Blood-Vessels Marching out of the Bone again to the Muscles, Glands, and Membranes of the Lower Lip.

E, The Inside of the Lower Lip Cover'd with its Proper Membrane.

FF, The Inner Face of the *Musculus Depressor Labii Inferioris Proprius. Vid. Tab. 12. Fig. 5. H.*

G G, Some of the Small Salival Glandules which Appear immediately under the Membrane *E*.

H H, These Muscles I could never find Describ'd by any Author, tho' they are constant in Nature, or at least in all those Bodies I have ever look'd for them. I call them *Elevatores Labii Inferioris Proprii* from their Office. They Spring Flethy from the Fore-part of the Lower Jaw, immediately under the *Gengivæ* of the *Dentes Incisores*, and Descend to their Insertions in the Skin, which Composes the Chin: When they Act, they Draw up the Skin on the Chin, and make it Appear Variously Indented.

M m m

APPEN.

APPENDIX.

THE EIGHTH TABLE.

Fig. 33.



THE Muscles of the Face as they Appear after the Skin, Fat, Membranes, and Musculi Quadrati Genarum are taken off.

- A A, The Musculi Frontales.
- B, The Orbiculares Palpebrarum.
- C, The Musculus Dilator Alæ Nasi.
- D, The Elevator Labiorum Communis.
- E E, The Elevator Labii Superioris Proprius.

prius.

- F F, The Sphincter Labiorum.
- G G, The Zygomatici seu Distortores Oris.
- H H, The Depressor Labiorum Communis.
- I, The Depressor Labii Inferioris Proprius.
- K, The Buccinator.
- L, The Temporalis.
- M, The Elevator Auriculæ.
- N, The Masseter.
- a, Part of the Os Jugale.
- b, The Cartilage of the Auricula free'd from the Skin.
- c c, The Parotide Gland.
- d, The Ductus Salivaris Superior of the Parotide Gland, as it Descends over the Masseter thro' the Buccinator into the Mouth.
- e e, A Branch of the Carotide Artery which passes thro' the Inferior Maxillary Gland.
- f, Part of the Lower Jaw Bone made Bare.
- g, Part of the Inferior Maxillary Gland.
- O, Part of the Musculus Biventer in Situ.
- P, The Mastoideus.
- Q, Part of the Cucularis.
- R, Part of the Elevator Scapulæ.
- SS, Parts of the Musculi Sternohyoidei.
- TT, Parts of the Coracohyoidei.

Fig. 34.

The Left Eye with its Muscles free'd from the Orbit and Dry'd.

- A. The Bulb of the Eye Fill'd with Wax.
- a a, The Optick Nerve in like manner Distended with Wax.
- B, A Portion of the Superior and External Margin of the Bone of the Orbit next the Nose.
- b . . . , A small Cartilage call'd the Trochlea, in which the Long Tendon of the Superior Oblique Muscle (D) passes to its Insertion.
- C, A Portion of the Inferior and External Margin of the Orbit, where the Musculus Obliquus Inferior (I) takes its Origin.
- D, The Obliquus Superior as it Arises from the Inferior Part of the Orbit, and passes thro' the Trochlea b . . . to its Insertion on the Back-part of the Bulb of the Eye. This Contortion of the Tendon of this Muscle renders it capable of drawing the whole Bulb of the Eye Outwards, and turning its Papilla Downwards.
- E, The Musculus Atollens.
- F, The Abducens.
- G, The Deprimens.
- H, The Adducens.
- I, The Obliquus Inferior, whose Origin from the External

Margin of the Inferior Part of the Orbit, renders it capable of performing the same Action in Opposition to the Trochlearis or Obliquus Superior, i. e. of drawing the Posterior and Lateral Part of the Bulb of the Eye towards its Origin, whereby the whole Eye is drawn Outwards, and its Pupilla turn'd Upwards; else the Projection of the Eyebrows would hinder our looking Upwards, unless the Head at the same Time was drawn very much Back.

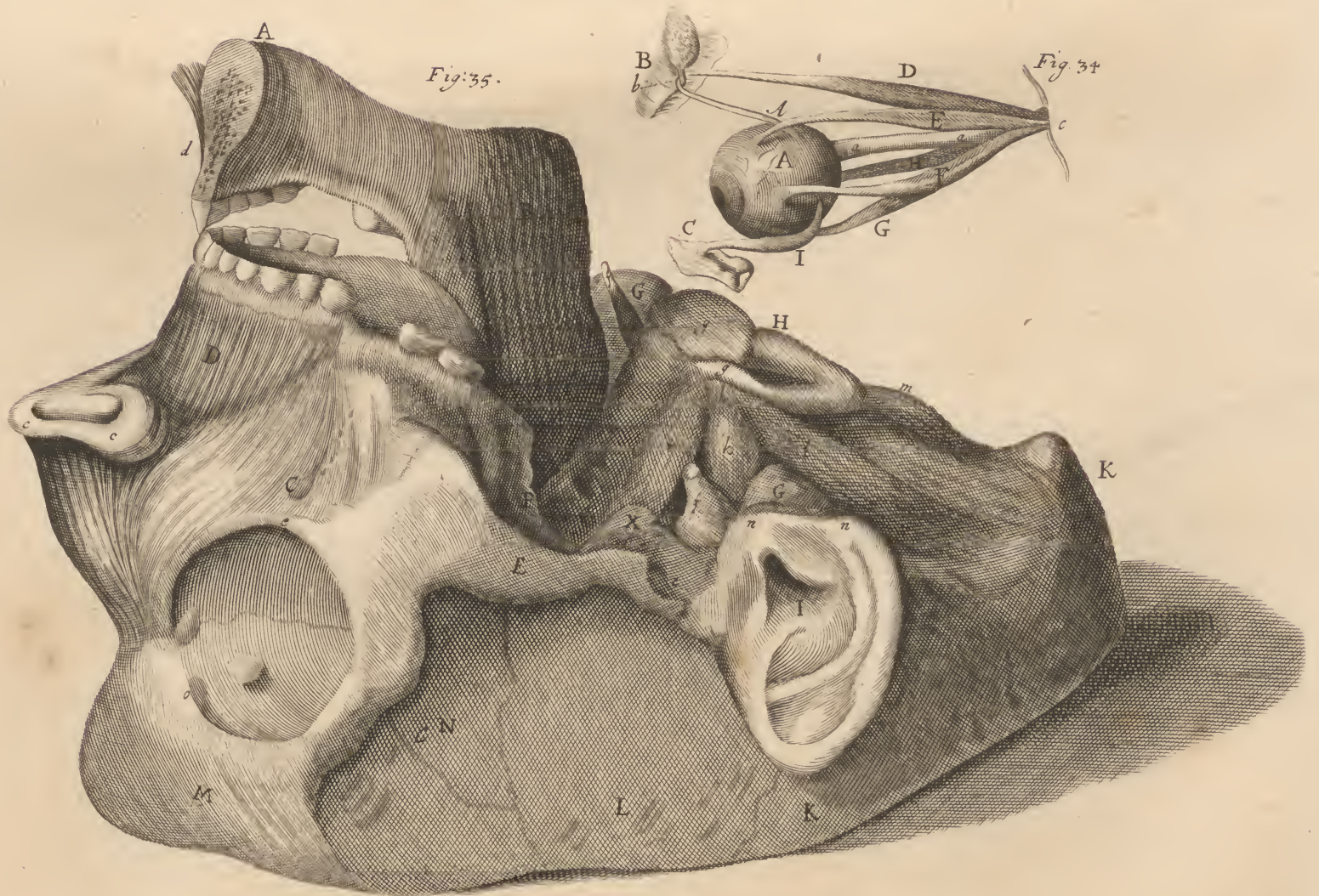
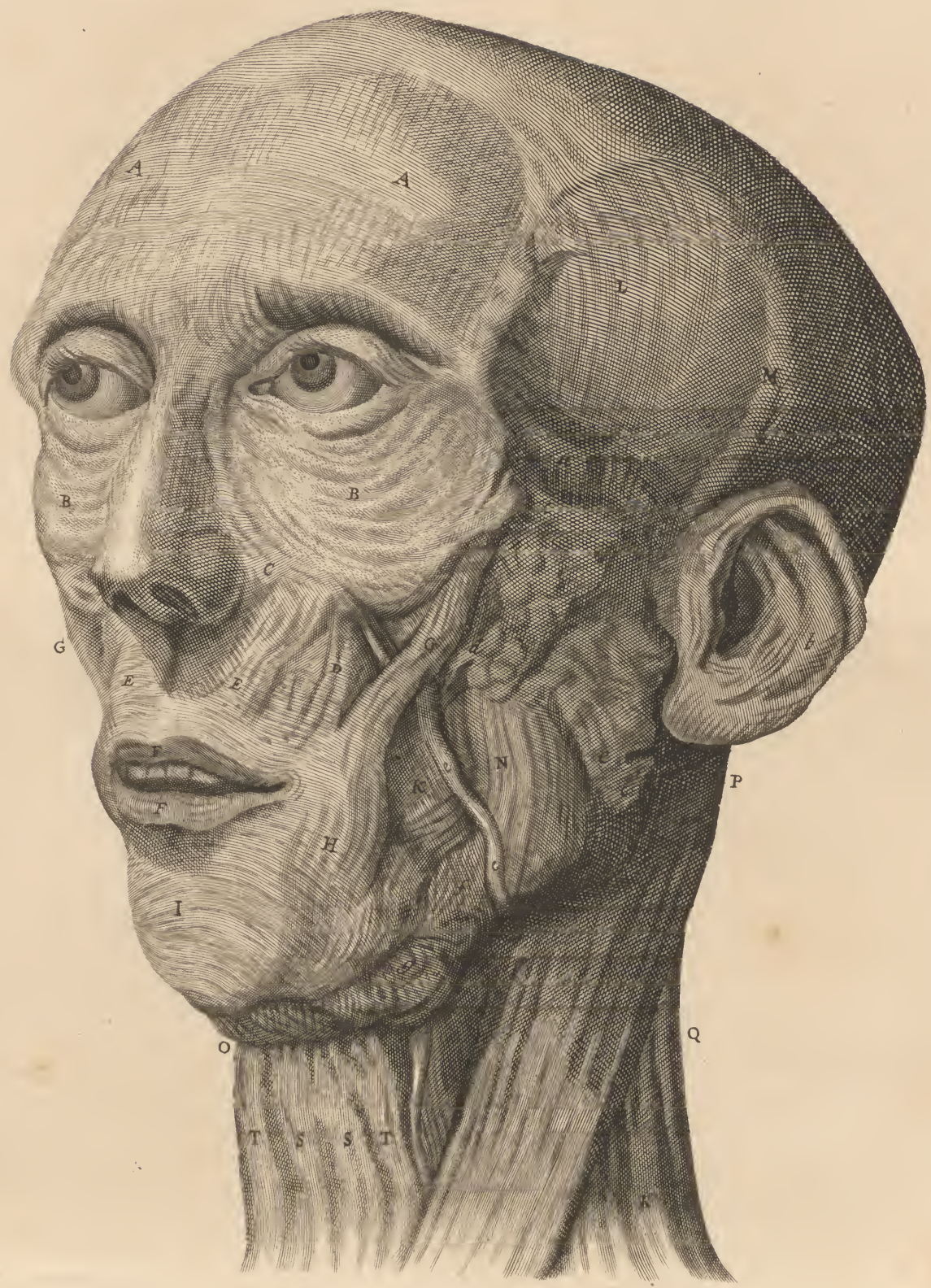
Besides these Proper Offices of the Two Oblique Muscles of the Eyes, they have conjunctly a very usefull common Office in holding the Bulb of the Eye as it were on an Axis, they prevent its being drawn Inwards, when any of the Straight Muscles Act; by which means, each performs its proper Office in turning the Eye either Upwards, Downwards or Sideways; which is no Inconsiderable Artifice in Nature.

Fig. 35.

Represents the Inferior Part of the Skull with its Basis uppermost; the Left Side of the Lower Jaw together with the First Vertebra of the Neck and its Muscles Arising from it, remaining to the Occiput.

- A, The Left Side of the Lower Jaw.
- B, The Musculus Pterygoideus Internus, in Situ.
- C, The Foramen of the Fourth Bone of the Upper Jaw, by which a Large Branch of the Fifth Pair of Nerves passes to the Muscles of the Face, and a Branch of the Carotide Artery to the Inner Cavities of these Bones, as you see them Express'd in the preceding Figure.
- D, The Musculus Depressor Labii Superioris Proprius & Constrictor Alæ Nasi, here cut from its Insertion to the Upper Lip, and left at its Origin from the Gums of the Upper Jaw.
- d, Part of the Elevator Labii Inferioris Proprius left to its Origin from the Lower Jaw.
- e, That Part of the Inferior Margin of the Orbit, where the Inferior Oblique Muscle of the Eye Springs, Express'd in the preceding Figure at C.
- E, The Os Jugale.
- f f, The Styloidal Process's of which that of the Right Side is broken off, which frequently happens by means of the Rope after the Common Execution of Malefactors.
- G G, The Mammiform Process's.
- H, The First Vertebra of the Neck remaining on the Occiput.
- g g, Two Process's of the First Vertebra of the Neck, which are Articulated with the like Process's of the Second.
- h, The Extremity of the Transverse Process of the First Vertebra.
- i, The Musculus Annuens or Rectus Minor Anticus, Express'd somewhat Foreshorten'd in Appen. Fig. 8.
- k, The Rectus Lateralis or Abnuens Lateralis.
- l, The Obliquus Superior Capitis.
- m, The Musculus Rectus Minor Posticus.
- l, The Auricula or Outward Ear.
- n, The Lobe of the Ear cut off.
- o, That Part of the Superior Orbit where the Trochlea is Fasten'd.
- K K, The Os Occipitis.
- L, The Os Squamosum.
- M, The Os Frontis.
- N, Part of the Os Sphenoides.







A P P E N D I X.

THE N I N T H T A B L E.

Fig. 36.



HE W S divers Muscles Employ'd in the Motions of the Head and *Vertebrae* of the Neck, which Appear on the Back-part.

A, Part of the Hairy Scalp remaining on the Fore-part of the Head.

B, The *Os Occiputis*, made bare.

C, Part of the *Musculus Splenius* left at its Insertion.

a, Part of the *Os Jugale*.

DDD, The *Musculus Complexus* Rais'd from its Insertion, to shew its Inside.

E E, The *Recti Majores*, that on the Right Side remaining *in Situ*, that of the Left hanging down from its Origin.

F F, The *Obliqui Superiores*, *in Situ*.

G G, The *Obliqui Inferiores*, *in Situ*.

H H, The *Recti Minores*, also *in Situ*.

b, The *Processus Mastoideus* of the Left Side, made bare.

c, The Back-part of the First *Vertebra* of the Neck, made bare.

d, Part of the *Complexus* Inserted to the Mammiiform Process, by *Fallopius* made a Distinct Muscle, which with its Corresponding Part on the other Side, he reckons the Third Pair of Muscles of the Head.

III, The *Spinales Colli*, that of the Left Side remaining *in Situ*, the Right being Rais'd from its Inferior Part, and Turn'd to One Side, to shew its Subjacent Muscle the *Transversalis Colli*.

K, The *Transversalis Colli* which Arises from the Transverse Processes of the Inferior *Vertebrae* of the Neck, and is Inserted to the Spinal Processes of its Superior *Vertebrae*.

L L L, The *Musculi Interspinales Colli*; These are not taken Notice of by Authors, tho' they are Distinct Fair Muscles as they are here Represented: It was for these Muscles the Spinal Processes of the *Vertebrae* of the Neck are made Double: They draw the Spinal Processes nearer each other, when we pull the Head very much Back, as when we would look on the *Zenith*.

eeee, The *Apices* of the Double Spinal Processes.

f, The Extremity of the Spine of the First *Vertebra* of the *Thorax*.

Fig. 37.

Represents Part of the Organ of Hearing of a Calf, where a Small Bone (Distinct from that plac'd between the Long Process of the *Incus* and *Stapes*) may be seen in the Tendon of the *Musculus Stapedis*. *Schellhammer* tells us of the like Bone found in some Animals lying in the Tendon of the Internal Muscle of the Ear, Describ'd by *Eustachius*; but whither he has mistaken it for the *Musculus Stapedis*, no Opportunity has hitherto given me occasion to Observe. The Knowledge of this Small Bone in the Tendon of the *Musculus Stapedis* of a Calf, was Communicated to me by the Ingenious Dr. *Adams*; but there is no such Contrivance in Humane Bodies.

A A, Part of the *Os Petrosum*.

B, The *Foramen Rotundum*.

C, The *Stapes* on the *Foramen Ovale*.

E, The *Musculus Stapedis* lying bare in the Cavity of the *Tympanum*; it not being Inclos'd in a Bony Channel in this Animal, as in Humane Bodies.

F, The Small Bone in the Tendon of the *Musculus Stapedis*, which is plac'd on a Rising of the *Os Petrosum*, on which it Acts as on a Pulley, by which means it draws the *Stapes* from the *Foramen Ovale*.

G, The *Cochlea* Open'd.

Fig. 38.

The Back-parts of the Muscles of the *Pharynx* and *Oesophagus*.

A A A, That Part which Composes the *Pharynx*.

BB, The *Musculus Pterygopharyngeus*: This is Erroneously Divided into Two Pair of Muscles by Authors, as Appears by *Tab. 34. Fig. 3, 4.* after *Bourdon*: It has Two Thin Flethy Origins from the Roots of the *Processus Pterygoideus*, and in a Semicircular Manner Embraces the Back-part of the Glandulous Membrane of the *Fauces* as well as the *Tonsilla*. When it Acts in Deglutition, it not only Straitsens the *Fauces*, but Compresses the *Tonsilla*, as well as the Lesser Glands of the *Fauces*, and Forces out their contain'd Matter at the same Time, to join with the Aliment in its Descent to the Stomach; this Muscle Acts in like Manner in Secretion or Hawking up any Tenacious Matter, whither Log'd in the *Fauces* or Excretory Ducts of the *Tonsilla*. I chuse to make this a Distinct Muscle from the *Oesophagus*, not only because its Extended on that Part call'd the *Pharynx*, but it Acts Distinct from the *Oesophagus*; for when this is Contracted in Deglutition, that is Dilated.

CC, The *Tonsilla*.

DD, The *Musculi Stylopharyngei* which draw the *Fauces* Upwards and Dilate them.

E E, The *Oesophagus* or *Constrictor Gulae*.

F, Part of the Superior Long Process of the Scutiform Cartilage, whence the last mention'd Muscle partly Arises.

G, The *Musculus Vaginalis Gulae*, Cover'd with its External Membrane. The Fibres of this Perforated Muscle of the *Gula*, have a Double Order of Fibres; the External Descend according to their Length, the Internal Parts Obliquely; the Former seem to Arise from the Arytenoidal Cartilages under the *Glottis*, and passing somewhat Obliquely to the Back-part of the *Gula*, Descend to the Stomach; the Latter Order of Fibres seem to be a Continuation of the *Constrictor Gulae*, and Descend Obliquely to the Upper Orifice of the Stomach. The Office of this Muscle is to Press the Aliment after Deglutition into the Stomach, to which, by its own Weight it is apt to Descend in Humane Bodies; but in Quadrupedes the Position of the *Gula* being Horizontal, this Muscle is Compos'd of a Double Order of Spiral Fibres, mutually Intercussating each other; as it is Describ'd by Dr. *Willis* and Others.

Fig. 39.

A Portion of the *Intestinum Duodenum* Distended with Wind.

A, Its External Membrane, continued from the *Peritonaeum*, Rais'd.

B, The External Surface of the Gut with the last mention'd Membrane remaining on it.

C, The External Longitudinal Fibres of the Intestine.

D, The Orbicular or Circular Fibres plac'd immediately under the Former, which by Dr. *Cole* are thought to be Spiral, and a continued Thread from one Extream of the Gut to the other, by which means the Peristaltick Motion of the Intestines are continued.

By what I could ever Observe in Examining these Fibres, whether after Boiling or not, I must confess I could never be satisfied whether they are Continued and of a Spiral Disposition, nor indeed is it possible to Untwist a Single Fibre if they were so Dispos'd, by reason of its Smallness and Collateral Adhesion to each other, by means of their Blood-Vessels; but on the contrary they rather Appear on very strict Examination, to be Semicircular, some longer and others shorter; by which means they more Adequately bring the Sides of the Intestine nearer each other, in Order to drive on its Contents. Besides this Office of the Muscular Fibres of the Intestines, by their Reciprocal Co-operation, they not only Compress their Subjacent Glands, and Drive out their contain'd *Mucus* to join with the Aliment; but by Collaterally pressing each Side of the Guts, they Open the Mouths of the Lacteal-Vessels to receive the *Chyle*.

Fig. 40.

Represents a Portion of the *Intestinum Jejunum* Distended with Wind; its External Membrane and Muscular Fibres being taken off.

A A, Some of the Semicircular Fibres still remaining on the Intestine.

CC, Divers Small Glands scatter'd at Various Distances between the last mention'd Clusters of Glands.

We are beholding to the Learned *Wepher* and the Accurate *Peyer*, for the Discovery of these Clusters of Glands of the Small Guts, as well as those Solitary Glands scatter'd up and down in the Large Guts: Tho' Dr. *Willis* and Others had mention'd a Glandulous Membrane of the Guts, yet it Furnish'd us with no tolerable Idea of their Existence and Office. They are supplied with Blood-Vessels, Nerves and Lympheducts, in Common with the Intestines and Excretory Ducts of their own; but I can by no means think the Nerves Import any Part of the Matter, which these Glands Discharge by their Excretory Pores, into the Cavity of the Intestine.

Peyer takes Notice that these Glandulous Clusters are plac'd in that Part of the Gut, Opposite to its Connection with the Mesentery, but you will frequently find them near the Mesentery; yet I never found them in that Part of the Gut, to which the Mesentery is Connected.

The Matter they separate from the Blood, and Discharge by their Excretory Pores into the Cavity of the Gut, is very Tenacious, and since its Compress from them by the Peristaltick Motion of the Guts, at the very instant the Alimentary Contents are passing by, it affords us no mean Argument, that it cannot so join with them, as to render any of the Chylous Particles more fit to pass the Mouths of the Lacteal Vessels; but that it only serves as a Vehicle to those Contents of the Guts, and Defends the Inward Villous Membrane from being Offended, either by Sharp Humours, or any Acuminated Bodies which often pass that Way.

The Glands of the *Cecum*, *Colon* and *Rectum*, which are Analogous to these of the Small Guts, differ very much from them in Figure and Situation; the Former lying in Clusters, whereas these from their Appearance, *Peyer* and Others call Solitary Glands; they being Small, Lentiformal, and very Numerous, plac'd from each other at Various Distances, not unlike the Stars in the Firmament.

All these Glands of the Intestines, as well as those of the Stomach, Liver, and *Pancreas*, are Affected with Cathartick Medicines, and Help to Discharge the Matter Evacuated by Stool; by Affected, I don't mean that the Purging Medicine bestows any Particles, immediately as it passes by them into the Cavity of the Gut; but that after its Particles are pass'd into the Blood by the Chyle Ducts, it meets with a Fit Strainer in the Parts last mention'd, as well as these Glands by which it passes off again with the Serous Part of the Blood.

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Y.

Yard, v. *Penis*.

The Anatomy of Humane Bodies
William Cowper
London, 1698
National Library of Medicine
Bethesda, Maryland

CONDITION PRIOR TO TREATMENT

The full cloth cover was a recovering in buckram book cloth. The tight-back style restricted the opening of the volume and caused damage to the text. The laid paper text was stiff, and moderately soiled to heavily soiled. There were losses to the text paper and tears throughout. There were previous damaging repairs of heavy western paper that discolored and caused tears. There were library stamps in the text.

TREATMENT

The text was collated in pencil. The edges of the text block and heavily soiled leaves were surface cleaned with graded and solid vinyl erasers. The text block was disbound. The text was washed in a bath of deionized water and deacidified in an aqueous solution of magnesium bicarbonate. The pH of the paper after treatment was 7.9. The leaves were repaired with Japanese paper and wheat starch paste. The repaired leaves were humidified and flattened. The book was sewn by hand with unbleached Irish linen thread with the addition of new end leaves of handmade paper. The spine was lined with both Japanese and Western paper using wheat starch paste adhesive, and a layer of unbleached Irish linen with PVA adhesive. The book was recovered in a new cloth case binding. Leather labels from the previous binding were reused.

Conservation Center for Art and Historic Artifacts
Accession #91.835
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